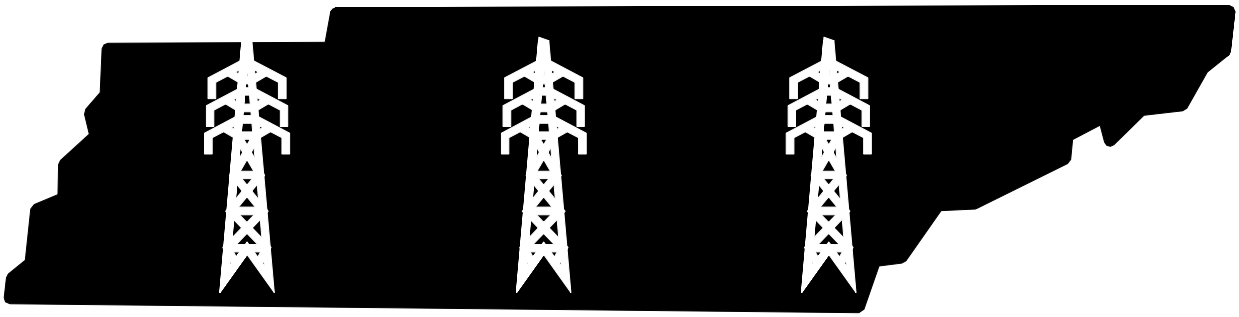
A TECHNICAL REPORT

Potential Impacts of Electric Utility Restructuring on Local Governments in Tennessee



The Tennessee Advisory Commission on Intergovernmental Relations

October 2001

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Potential Impacts of Electric Utility Restructuring on Local Governments in Tennessee

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Prepared for:
Tennessee Advisory Commission on Intergovernmental Relations

October 2001

PREFACE

This report, prepared by the University of Tennessee Center for Business and Economic Research, under contract with the Tennessee Advisory Commission on Intergovernmental Relations (TACIR), documents the reliance of local governments on the revenue contributions of electric utilities and the potential effects on local budgets that may arise from electric utility deregulation. This study is meant to complement the February 2000 report by the Office of the Comptroller, *The Potential Impacts of Electric Industry Restructuring in Tennessee*. That report focused provided an overview of national electric industry restructuring trends, and a brief discussion of the potential impact of restructuring on state and local revenues in Tennessee.

The TACIR pursued completion of this report as a result of the expressed interest in the subject by the membership of the Commission and due to the relevance of the topic to TACIR's ongoing research on state and local fiscal matters. Since its creation in 1978, the TACIR has completed or sponsored numerous studies concerning state and local fiscal matters in Tennessee, including a recent, extensive study on the state's fiscal structure, and reports on state-shared taxes and service taxes in Tennessee. This fiscal research is key to fulfilling TACIR's mandated role to provide a permanent agency to monitor the operation of federal-state-local relations and to make recommendations for their improvement.

— Harry A. Green
Executive Director

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SUMMARY OF MAJOR FINDINGS

- Local governments in Tennessee collected more than $177.9 million from electric utilities in 1998 including:

    - $89.1 million in payments-in-lieu-of-taxes (PILOTs) and property taxes from local distributors;
    - $87.3 million in state-shared TVA PILOTs; and
    - $1.5 million in direct PILOTs from TVA to the local governments.

- Between 1988 and 1998, PILOTs and taxes paid by electric utilities represented an average of 4.6 percent of total general fund expenditures and 4.4 percent of total own-source revenue of municipal governments.

- Between 1988 and 1995, PILOTs and tax payments from electric utilities constituted, on average, 2.3 percent of the total operating budgets of county governments and 5.2 percent of their total local revenue collections.

- On average, municipalities owning an electric utility are more reliant on revenues from the electric utility industry with the exception of municipalities with a population greater than 50,000. For example, for the entire sample of municipalities with populations less than 10,000, payments from the electric utility industry accounted for an average of 4.8 percent of total local own-source revenue from 1988 to 1998 compared to 8.0 percent for small municipalities that own an electric utility.

- Deregulation of the electric utility industry will have two major impacts on local revenue--direct revenue effects and indirect or feedback effects.

    - First, direct revenue impacts will include impacts on transaction-based taxes, arising from changes in retail prices and the unbundling of generation, transmission and distribution functions and changes in taxes paid by the utilities themselves such as property taxes and PILOTs.
    - Second, indirect or feedback effects will result from changes in private-sector economic activity that may occur in response to changes in electricity markets, which may in turn lead to changes in tax collections.

- Local governments use revenue collected from electric utilities to lower the reliance on other types of more visible local revenues and/or to supplement these funds in an effort to increase the provision of local services. Therefore, in the event of contracting revenues from electric utilities as a result of deregulation, many local government officials will be faced with the unpopular decision of choosing between raising local taxes (replacement) or reducing the level of services provided (retrenchment).

- Simulation analysis suggests that a 10 percent contraction in the local revenue from electric utilities will result in an increase in local taxes ranging from 5.1 to 8.0 percent combined with a reduction in local public services ranging from 2.0 to 4.9 percent.

- Results of a statistical analysis indicate that the level of local public services being provided is greater than would be demanded if voters in local jurisdictions had full knowledge of the taxes included in their electric utility bill. Hence, the findings raise new questions regarding the legitimacy of safeguarding local governments in Tennessee against *all* revenue loss stemming from electric utility restructuring.

- Three basic strategies have been identified as methods in which policymakers are trying to make their tax structures more conducive to retail choice in the electric utility industry and at the same time meet the objectives of tax competitiveness, efficiency and neutrality:

    1) replacing unique utility tax structures with a more uniform tax structure that is applicable to other types of businesses;
    2) modifying selected, non-competitive state and local tax taxes; and
    3) maintaining existing utility tax systems by extending utility-specific consumption taxes to out-of-state suppliers.

- Utilities perform many functions that benefit the public generally, but they probably could not find a "buyer" for these services in a strictly competitive market. Therefore, these benefits of the current regulated market run the risk of being "stranded" or left without financial support unless policymakers provide a mechanism to maintain support for public benefits. Potential stranded benefits include the following:

    - consumer protections;
    - stable and reasonable residential prices in rural areas;
    - universal service;
    - environmental programs;
    - energy independence and sustainable sources of energy; and
    - stable employment at relatively high wages and good benefits.

EXECUTIVE SUMMARY

State and local governments have long enjoyed a stable and, in most instances, significant source of revenue from the operation and taxation of electric utilities. In Tennessee, more than $331.0 million in revenue for state and local governments in 1998 can be attributed to the electric utility industry.

Local governments in Tennessee collected more than $177.9 million from electric utilities in 1998 including:

- $89.1 million in PILOTs and property taxes from local distributors;
- $87.3 million in state-shared TVA PILOTs; and
- $1.5 million in direct PILOTs from TVA to the local governments.

Revenue generated from property taxes and PILOTs represent a notable source of funds for local governments. The ability to tax utilities so heavily has been a function of their regulated status. Electric utilities were willing to pay the higher taxes because they could be passed on to the final consumer through regulated prices. Currently, however, the status of electric utilities is shifting as the regulatory climate in the U.S. undergoes revolutionary changes. To date, Tennessee has been insulated from the changing tide in the electric utility industry due to its inclusion inside the TVA region. However, the time for preparations for restructuring is quickly approaching as federal policymakers are starting to discuss TVA and its role in a competitive environment. There are many important questions that need careful evaluation in preparation for restructuring. California's energy crisis following restructuring provides an important lesson on the consequences of entering into restructuring without fully understanding all the issues involved. The current report focuses on the examination of the potential impact of restructuring on the fiscal health of local governments. The goals of the report include:

- Providing an overview of the electric utility industry in Tennessee and documenting the reliance of local governments on revenue contributions from the electric utility industry;
- Examining the potential impacts of restructuring on local government budgets including both direct and indirect effects; and
- Providing policymakers with a general framework for analyzing tax reform options.

SUMMARY OF ANALYSIS AND CONCLUSIONS

The Electric Utility Industry in Tennessee

The Role of TVA

- The Tennessee Valley Authority (TVA) is the nation's largest electric power generating system. Created by an act of Congress on May 18, 1933, TVA supplies 98 percent of the electric power consumed in the State of Tennessee.
- TVA makes payments-in-lieu-of-taxes (PILOTs) to states, counties and cities in its service region. The payments going to the State of Tennessee are equal to 5 percent of TVA's gross receipts, imposed on in-state sales.

- TVA PILOTs in excess of the level of payment received by the state for the 1976/77 fiscal year are apportioned as follows:
    1) 48.5% retained by the state;
    2) 48.5% paid to counties and municipalities; and
    3) 3% paid to impacted local governing areas which are experiencing TVA construction activities on electricity producing facilities.

- The 48.5% of the PILOTs designated for counties and municipalities are apportioned as follows:
    1) 30% paid to counties based on population share;
    2) 30% paid to counties based on acreage share;
    3) 10% paid to counties based on share of TVA land; and
    4) 30% paid to incorporated municipalities based on share of population living in incorporated places.

Distribution of Power

- In Tennessee, there are 63 municipal distributors and 23 rural cooperatives that buy their power from TVA. Investor-owned utilities operating in-state include Kingsport Power, a distributor of American Electric Power, Entergy Arkansas which serves about 60 customers in west Tennessee, and Kentucky Utilities Power which serves fewer than 10 customers in Claiborne County.

Municipal Electric Utilities

- Municipally owned electric utilities are exempt from federal, state and local taxes. However, TVA requires its distributors to make payments-in-lieu-of-taxes. In Tennessee, the PILOTs are calculated as the property tax equivalent plus four percent of the average gross profit for the preceding three fiscal years.
- In 1998, annual sales of municipal distributors in Tennessee totaled more than $2.5 billion. They sold 63.9 million megawatt hours of electricity and served nearly 1.9 million customers.
- On average, sales for municipal electric distributors increased 24.5 percent between 1992 and 1999. This corresponds to a 19.5 percent increase in megawatt hours sold and a 12.1 percent increase in the number of customers served by municipal distributors.

Electric Cooperative Distributors

- Electric cooperatives are customer-owned, non-profit corporations. As such, they are exempt from federal and state income taxes but are subject to ad valorem property taxes assessed by the state and payable to the counties and municipalities they serve. In 1998, electric cooperatives paid more than $12.6 million in property taxes to local governments in Tennessee.
- In 1998, annual sales of electric cooperatives in Tennessee totaled $0.9 billion. They combined to sell more than 14.9 million megawatt hours of electric power and serve nearly 670,000 customers.
- On average, sales for electric cooperatives increased 26.5 percent between 1992 and 1998. The increase in sales resulted from an 18.1 percent increase in megawatt hours sold and a 9.8 percent increase in the number of customers over the same time period.

Revenue Contributions of Electric Utilities to Local Governments in Tennessee

- The revenue contributions examined in the current study include only state-shared TVA PILOTs, PILOTs paid by municipal electric utilities and property taxes paid by electric cooperatives. TVA does make direct payments to local governments based on the value of property used in electric power production at the time the property was initially acquired. However, the direct payments, totaling less than $1.5 million, are not included in the current analysis.

Municipal Governments

- Between 1988 and 1998, revenue contributions from electric utilities represented an average of 4.1 percent of total *general fund expenditures* for municipalities with populations below 10,000 and 4.9 percent of *general fund expenditures* for municipalities with populations greater than 10,000.
- From 1988 to 1998, revenue contributions from electric utilities comprised an average of 4.8 percent of all local own-source revenue for smaller municipalities (population less than 10,000) compared to 4.2 percent for larger municipalities.
- The state-shared TVA PILOTs represent a larger percentage of the total payments from electric utilities for municipalities with populations under 10,000 than for those with populations over 10,000. In 1998, state-shared TVA PILOTs constituted 0.8 percent and 2.0 percent of general fund expenditures and local own-source revenue, respectively, for smaller cities. In comparison, the state-shared TVA PILOTs represented only 0.5 percent of total general fund expenditures and 0.9 percent of total own-source revenue for larger municipalities. This implies that a decrease in the level of TVA PILOTs would have a greater impact on smaller municipalities while larger cities would be more sensitive to changes in the level of revenue stemming from the distributors.
- Payments from municipal electric utilities and electric cooperatives comprised 66.2 percent of the total revenue derived from electric utilities for small cites compared to 77.3 percent for large cities.

County Governments

- During the period of 1988 to 1995, revenue contributions from electric utilities represented, on average, between 2.1 and 2.5 percent of the counties' total *operating budget*. During that same period, the revenue contributions from electric utilities comprised an average of 4.9 percent to 5.6 percent of their total local revenue collections, indicating that county governments are slightly more reliant on tax revenue from electric utilities than municipal governments.
- Because counties receive 70 percent of the state-shared TVA PILOTs, they are more reliant on the TVA portion of the total revenue contributions of electric utilities. In 1995, state-shared TVA payments represented, on average, 4.0 percent of all local own-source revenue for county governments and 1.6 percent of their operating budgets. Because the state-shared TVA payment accounts for over 75 percent of total revenue received from electric utilities, county governments are more vulnerable to changes in the level of TVA's gross receipts payments.

Municipalities Owning an Electric Utility

- Municipalities (and counties) owning an electric utility are potentially most vulnerable to revenue loss resulting from competitive pressures in the electricity market. Because local governments owning an electric utility receive an annual transfer equal to four percent of the

utility's average gross profit for the preceding three fiscal years, they face additional uncertainty about the impacts of restructuring on this historically stable source of revenue.

- The recent trend in PILOTs paid to municipalities owning an electric utility reveals that the distributor portion of the revenue ranged from 67 percent to more than 87 percent of the total payments received. Furthermore, data indicate that municipalities that own an electric utility and have an average population of 5,000 to 10,000 received the largest average per capita transfer from their respective electric distributor.
- On average, municipalities owning an electric utility are more reliant on revenues from the electric utility industry with the exception of municipalities with a population greater than 50,000. For example, for the entire sample of municipalities with populations less than 10,000, payments from the electric utility industry accounted for an average of 4.8 percent of total local own-source revenue from 1988 to 1998 compared to 8.0 percent for small municipalities that own an electric utility.
- Municipalities with a population of 5,000 to 10,000 and owning an electric utility appear the most vulnerable to potential negative impacts in the wake of restructuring in the electric industry. Their relatively heavy reliance on electric utility revenue can be attributed to several factors, including greater pressure from voters to provide local public services afforded to residents in larger cities and a less developed tax base.

Revenue Implications of Electric Utility Restructuring for Local Governments in Tennessee

- Deregulation of the electric utility industry will have two major impacts on local revenue -- direct revenue effects and indirect or feedback effects. First, direct revenue impacts will include impacts on transaction-based taxes, arising from changes in retail prices and the unbundling of generation, transmission and distribution functions, and changes in taxes paid by the utilities themselves such as property taxes and PILOTs. Second, indirect or feedback effects will result from changes in private-sector economic activity that may occur in response to changes in electricity markets, which may in turn lead to changes in tax collections.

Direct Revenue Impacts

Gross Receipts Taxes

- TVA currently pays the State of Tennessee payments–in-lieu-of-taxes calculated as 5 percent of their gross receipts, imposed on in-state consumption. Forty-eight and one-half percent of the total TVA PILOTs is redistributed to local governments, providing a significant source of revenue for county and municipal governments. Gross receipts taxes are subject to several revenue stream risks in the event of deregulation. The primary risk is the legal issue of sufficient nexus. State and local governments may not have nexus to impose these taxes on out-of-state power providers that lack a physical presence in Tennessee.
- To avoid loss of revenue due to lack of nexus, many states have repealed the gross receipts tax on electric generators and replaced it with a sales and use tax where the use tax is imposed on in-state consumers of electricity provided by out-of-state firms. The use tax is then collected from the in-state distributor. Another alternative is to replace the gross receipts tax with a kWh distribution tax that applies to all distributors of electricity. Whatever the method, a primary goal of the tax design should be to create a level playing field in terms of taxation between in-state and out-of-state generators of electricity.

- The second major risk to revenue flows from the gross receipts tax on electricity providers arises due to potential changes in retail prices. Since gross receipts taxes, by definition, are based on a firm's revenue, downward pressure on the retail price of electricity will result in lower revenue collections if there is no corresponding change in demand.
- One way to mitigate the impact of lower retail prices would be to replace the current gross receipts tax with a kWh tax. The tax receipts would be more immune to changes in prices, and they would grow at a reasonably predictable rate with the growth of population and economic activity in the state. Another advantage of the kWh tax is that it creates a more level playing field between in-state and out-of-state providers since it creates a destination-based tax on electricity as opposed to an origin-based tax.

Sales

- In some states, deregulation in the electric utility industry would lead to direct impacts on collections from the local option sales and use tax for local governments. However, in Tennessee, the local option tax does not apply to energy fuels or electricity. Hence, any impacts on sales and use tax collections will impact local governments only indirectly through revenue sharing arrangements. Shifts in revenue sharing arrangements may come about due to the fact that sales and use tax collections at the state level are vulnerable to revenue stream risk associated with deregulation. The two major sources of vulnerability are 1) reductions in retail prices of electricity and 2) the unbundling of charges into taxable goods (electricity) and potentially non-taxable services (transmission and distribution). Replacing the sales tax on electric power with a kWh tax and setting the rate so that the final effect would be revenue neutral could mitigate the impact of volatile retail prices and unbundling of charges.

Property Tax

- The level of stranded costs could be a significant factor in determining the impact restructuring will have on property tax revenue. Although stranded costs are not expected to be an issue for municipal and cooperative distributors, they could be substantial for TVA.
- A second important factor determining the impact on property tax revenue is the differential treatment of utility and non-utility property by state and local governments. The property tax is the primary source of the relatively high tax burdens on electric utilities. The source of these high property tax burdens is the manner in which utilities are taxed relative to other types of business property. Deregulation is expected to lead to increased political, legal and market pressures to eliminate the differences, especially the centralized assessment as a unit and the non-uniform classification system. The push for reduced tax burdens will be fueled by the inability to automatically recoup the costs of higher taxes through higher consumer prices.
- All local governments in Tennessee will be subject to the risk of reduced property tax revenue from electric utilities if more uniform treatment vis a vis other classes of property results from deregulation.

Profitability of Municipal Distributors

- Potential sources of impact on distributor profitability are changes in the retail price of electricity, unbundling of charges, changes in the law regulating the level of payments made to

local governments and changes in the scope of operations undertaken by the distributors. In a competitive environment, it will not be as easy for providers of electric services to automatically pass taxes on to the final consumer through higher prices; therefore, it is not certain that distributors could continue to guarantee the current level of payments to the owning jurisdiction.

- Without the requirement of TVA oversight, the potential for changes in state legislation regarding the operation of municipal electric utilities and electric cooperatives is likely to increase for both economic and political reasons. Fewer controls could open the door for local governments to actually increase the revenue contributions from electric utilities via discretionary transfers of monies from municipal utilities to the general fund of the owning jurisdiction.

Indirect Revenue Impacts

- If revenues at the state level experience significant shifts in response to restructuring in the electric utility industry, it is likely that revenue sharing arrangements between the state and local governments will also change. There are two primary concerns with regards to changes in the level of intergovernmental aid arising from deregulation:
    1) the manner in which state governments react to potential decreases in the level of collections currently shared with local governments; and
    2) if and how state governments will devise new sharing arrangements to offset declining property tax collections at the local level.

- One of the most prominent intergovernmental aid programs in Tennessee is the BEP program. An important component of BEP funding is the fiscal capacity of a jurisdiction, which is in part based on equalized, assessed property values. Therefore, restructuring in the electric utility industry is likely to have significant impact the distribution of this funding. More specifically, it is plausible that all communities in the state will see a shift in their funding due to the change in property tax bases. Fortunately, the smoothing of the data used in the construction of the BEP's fiscal capacity index will allow for a more gradual phasing in of the effects of restructuring.

- Economic impacts of restructuring, measured in terms of changes in output, personal income and employment, will potentially arise from two sources:
    1) the nationwide reduction in electricity costs, which will have a direct impact on every state; and
    2) the changes in electricity prices in Tennessee relative to the price in the U.S. In terms of revenue for local governments, as the economy expands through higher levels of output, income and employment, a corresponding expansion in local tax bases and revenues can be expected.

Potential Replacement and Retrenchment Effects

- Local governments use revenue collected from electric utilities to lower the reliance on other types of more visible local revenues and/or to supplement these funds in an effort to increase the provision of local services. Therefore, in the event of contracting revenues from electric utilities as a result of deregulation, many local government officials will be faced with the unpopular decision of choosing between raising local taxes (replacement) or reducing the level of services provided (retrenchment).

- One way to gain a simple understanding of the potential magnitude of replacement effects stemming from electric utility restructuring is to measure the increase in property tax levy

necessary to offset the loss of local revenue from electric utilities. The analysis suggests that complete elimination of the electric utility payments would translate into average replacement costs of increased property tax levy equal to $0.09 or a 3.6 percent increase in average equalized property tax rates.

- Potential retrenchment effects were evaluated by calculating elasticities. The elasticity of local government expenditures with respect to revenues from utilities is measured as the percentage change in the level of expenditures given a percentage change in the level of utility revenue contribution. The elasticities for municipal governments range from 0.08 to 0.49 across the different categories of public services and the measures for county governments range from 0.20 to 0.24.

Simulation Analysis

- Responses to changes in the level of payments received by local governments from electric utilities were simulated using the calculated elasticity measures. The range of the decrease in electric utility revenue contributions to local governments used in the analysis is 10 percent to 50 percent. The resulting range in retrenchment of general fund expenditures of municipalities is 2.9 to 16.0 percent.
- Retrenchment in education spending is projected to be the least impacted by decreases in electric utility payments as the simulated retrenchment effects range from 2.0 to 12.0 percent. Although the retrenchment effects appear small, similar simulations suggest that a 10 percent decrease in personal income in a community would lead to only a 2.5 percent retrenchment in the provision of local public services. The indication is that payments from electric utilities are more stimulative to local spending than personal income.
- The simulations suggest that a 10 percent contraction in the local revenue from electric utilities will result in an increase in local taxes ranging from 5.1 to 8.0 percent. For all the simulated scenarios at least nearly one-half of the potential contraction in electric utility payments was compensated for by increases in local taxes.

Tax Policy Issues

- Policymakers in the states that have entered into or that have passed legislation pertaining to retail choice and electric utility deregulation are focusing on three fundamental issues regarding tax policy – tax competitiveness, economic efficiency or neutrality, and revenue neutrality. Other criteria such as equity and stability are receiving some consideration and are being incorporated into reform policies while others such as administrative ease seem to be given relatively little attention, with the exception of nexus concerns.
- Three basic strategies have been identified as methods in which policymakers are trying to make their tax structures more conducive to retail choice in the electric utility industry and at the same time meet the objectives of tax competitiveness, efficiency and neutrality:
    4) replacing unique utility tax structures with a more uniform tax structure that is applicable to other types of businesses;
    5) modifying selected, non-competitive state and local tax taxes; and
    6) maintaining existing utility tax systems by extending utility-specific consumption taxes to out-of-state suppliers.

- A common feature to the majority of legislative changes in states dealing with deregulation has

been an attempt to design tax policy that is revenue neutral. Revenue neutrality is somewhat ambiguous as it has been defined in several terms including: total state and local taxes imposed on utility customers; total taxes imposed on utilities; total taxes imposed on both utilities and customers; and the distribution of the tax burden across different classes of customers. Political pressure is the key reason for the mandate for revenue neutral tax reform.

- A study conducted by Dowell (2000) revealed that electric utility contributions to the general fund of local governments in Tennessee give rise to tax price distortions, thus leading to fiscal illusion. The results indicate that the level of local public services being provided is greater than would be demanded if voters in local jurisdictions had full knowledge of the taxes included in their electric utility bill. Hence, the findings raise new questions regarding the legitimacy of safeguarding local governments in Tennessee against *all* revenue loss stemming from electric utility restructuring.

The Changing Role of Local Distributors in the Era of Restructuring

- There are significant concerns about how end-users will be billed when there are different suppliers selling electricity generation and transmission services in the same community while distribution services are still provided by local distributors. While the complications associated with billing issues are not insurmountable, they require significant consideration and planning prior to the implementation of retail choice.
- The onset of retail competition is fueling concern about metering and the right of access to those meters. In Tennessee, the electric distribution company currently owns, installs and reads meters and is the only entity with the right to access meters on customer premises. Changes will be needed if other companies require similar access.
- Disconnection policies will also have to be reevaluated in the era of deregulation. Concerns include disconnection for nonpayment of services and disconnection or discontinuity of service resulting from failing to choose or switching to a new supplier. Policies for disconnection due to nonpayment have been addressed in many states by passing legislation allowing for disconnection only in the event of nonpayment of regulated charges such as distribution and transmission. Thus, they allow for little or no disconnection for nonpayment of competitive charges from suppliers.

Stranded Benefits

- Utilities perform many functions that benefit the public generally, but they probably could not find a "buyer" for these services in a strictly competitive market. Therefore, these benefits of the current regulated market run the risk of being "stranded" or left without financial support unless policymakers provide a mechanism to maintain support for public benefits.
- Potential stranded benefits include the following: consumer protections; stable and reasonable residential prices in rural areas; universal service; environmental programs; energy independence and sustainable sources of energy; and stable employment at relatively high wages and good benefits.

- Stranded benefits preservation strategies include:
    1) requiring market participants to provide these services as a condition of entering the market;
    2) raising funds to pay for the "above-market" costs of public services;
    3) creating an aggregation of buyers that uses its market power to buy the services; and
    4) removing market barriers that would otherwise impede the ability of market participants to offer and obtain particular goods and services.

Recommendations for Additional Analysis

- Input-output (i.e., inter-industry) analysis to obtain better measurements of the indirect effects of specific price changes and tax designs on revenue collections.
- Detailed analysis of impact on BEP funding under specific scenarios.
- Careful evaluation of distributional consequences of competitive pricing across classes of customers.
- Design of optimal tax to promote economic efficiency, tax adequacy and stability, competitiveness, low administration and compliance costs, and equity.
- Simulation analysis of revenue impacts of specific alternative tax reforms.

CHAPTER 1: INTRODUCTION

I. PURPOSE OF THE STUDY

Local governments have long enjoyed a stable and, in some instances, significant source of revenue from the operation and taxation of electric utility companies and the services they provide. The National Council on Competition and Electric Industry estimates that local governments collect taxes on utilities that are generally double the effective rate imposed on other industries[1]. In Tennessee, more than $331.0 million in revenue for state and local governments during 1998 can be attributed to the electric utility industry. The state collected more than $180.0 million in payments-in-lieu-of-taxes (PILOTs) from the Tennessee Valley Authority (TVA) and nearly $3.5 million from investor-owned utilities. In addition, sales and use tax on electricity sales totaled $55.1 million in 1998.[2] However, state government is not the only beneficiary of revenue generated by public utilities. Often, it is sub-state governments that rely more heavily on utilities for generation of own-source revenue. For example, in 1998, local governments in Tennessee collected more than $89.1 million in PILOTs and property taxes from local distributors, $87.3 million in state-shared revenue based on TVA PILOTs and $1.5 million in TVA PILOTs paid directly to county governments.[3] The State of Tennessee Comptroller's Office is currently charged with studying the fiscal impact of electric utility deregulation for the state. The work presented in this study will complement the work conducted by the Comptroller by focusing on the fiscal impacts of electric utility deregulation on municipal and county level governments.

In general, public utilities contribute to municipal and county budgets via several vehicles including property tax, state-shared revenue from the sales and use tax and gross receipts tax, payments in-lieu of taxes (PILOTs), and profits of municipally owned utilities. In Tennessee, the primary source of revenue to local governments stemming from municipal utilities is PILOTs and property taxes. In addition, the state shares the PILOTs paid by TVA with local governments.

By using public utilities as tax collectors, local governments can use revenue received from these entities to supplement their general fund, thus reducing their reliance on more traditional revenue sources such as property and sales taxes. Revenue generated from property taxes and PILOTs represent the major source of local government revenue from utilities. An important question is how local government budgets might respond to changes in receipts from the industry following deregulation. This is a question that is addressed in subsequent sections of this report.

In 1997, there were 64 municipally owned utilities and 25 cooperatives in Tennessee with combined retail sales of more than $88 billion and gross revenue of nearly $4.4 billion. Additionally, public

[1] Deloitte & Touche, L.L.P., "Federal, State and Local Tax Implications of Electric Utility Industry Restructuring," *The National Conference of State Legislatures* (1996).
[2] Tennessee Department of Revenue, *Revenue Collections* (June 1998).
[3] Data obtained from several sources including annual audit reports submitted by local electric distributors, Tennessee Department of Revenue, County and Municipal Fund Report for 1998 and data provided by TVA's Accounting Office.

utilities serviced 2.6 million customers in the state over the same time period.[4] Given the magnitude of economic activity generated by municipal utilities in Tennessee, the impact of retail wheeling[5] resulting from deregulation has the potential to significantly alter the fiscal capacity of local governments throughout the state.

The ability to tax utilities so heavily has been a function of their regulated status. Historically, electric utilities were given exclusive franchise to distribution services within a jurisdiction. Along with their franchise status came the expectation that they would be taxed. The companies were willing to pay the taxes because they could be passed on to final consumers given that regulated prices were based on achieving a predetermined rate of return. Currently, however, the status of such firms is shifting as the regulatory climate in the United States undergoes a revolutionary process of change. To date, Tennessee has been insulated from the changing tide in the electric utility industry due to its inclusion inside the TVA fence. However, the time for preparations for restructuring is quickly approaching as Federal legislation is starting to focus on TVA and its continued role in the power industry.

II. PUTTING THE CALIFORNIA CRISIS INTO PERSPECTIVE

The energy crisis in California has put the brakes on much of the restructuring activity throughout the rest of the country. However, deregulation of the electric utility industry is not dead; but rather, it is in remission waiting to reappear once the skepticism and extreme caution arising from the California experience start to fade. Hence, it is important to understand the pitfalls of California's attempt to restructure the industry so that Tennessee can avoid falling into the same traps.

California's new wholesale power market and customer choice program, which started in March of 1998, enjoyed modest success for the first year and a half. In the summer of 2000, retail prices in southern California reached all time highs, and generation capacity shortages forced temporary outages in northern California. Since then, the coverage of California's energy crisis has sent shock waves across the country with everyone wondering if deregulation of the electric utility industry in their own state could lead to such a crisis.

California's energy crisis can be categorized into three interrelated problems including:[6]

1). Precipitous increase in wholesale electricity prices;
2). Intermittent power shortages during peak demand periods;
3). The deterioration of the financial stability of California's three major investor-owned utilities—Pacific Gas and Electric (PG&E), Southern California Edison (SCE) and San Diego Gas and Electric (SDG&E).

Although there is not a consensus on the causes of California's problems, there is general agreement among industry analysts on a core set of factors contributing to the crisis. The factors include:[7]

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[4] U.S. Department of Energy, Energy Information Administration, <http://www.eia.doe.gov/cneaf/electricity/chg_str/regmap.html>.

[5] Retail wheeling is defined as transmission of electricity to the end-user on lines owned by one utility on behalf of another utility.

[6] U.S. Department of Energy, Energy Information Administration, *California Electric Energy Crisis*.

[7] Anjali Sheffrin, Director of Market Analysis, California Independent System Operator, "What Went Wrong With California Electric Utility Deregulation?" (April 2001).

1). Investment in new power generation capacity has not kept pace with the increasing demand for electricity. California's generation capacity decreased 2 percent from 1990 to 1999 while retail sales increased by 11 percent. Furthermore, no new generation capacity has been constructed in California for over a decade.
2). To meet its demand for power, California relies on substantial out-of-state generation capacity, of which a significant portion is produced by hydroelectric power in the northwestern U.S. Unusually low water levels in the northwest led to reduced hydroelectric power generation, which resulted in a reduction of imports to northern California.
3). Contributing to the power shortage problem was the fact that approximately 10 gigawatts of generation capacity were out of operation during some of the high demand times in the year 2000.
4). The high voltage transmission line connecting southern California to northern California became congested at times, reducing the flow of surplus electricity capacity in the southern portion of the state to the northern portion.
5). Many independent power generators were reluctant to sell power to PG&E and SCE because of their financial troubles, thus exacerbating the power shortage problem.
6). Shortcomings of the State's restructuring plan with regards to the wholesale electric market rules contributed to the increase in wholesale prices. Specifically, under the market rules, PG&E, SCE and SDG&E were required to buy all their power through California Power Exchange (CalPX), the State's "market-maker" for electricity. This prevented the utilities from entering into forward long-term contracts for energy. Therefore, when spot market wholesale prices increased because of power shortages and increasing generation costs, the utilities had no option but to purchase the high-priced power.
7). An increase in natural gas prices and the high costs of meeting California's power plant emission standards also contributed to the increase in wholesale electricity prices.
8). Because the state's restructuring legislation placed caps on retail electricity prices, the three investor-owned utilities were unable to recover increased costs resulting from exorbitant wholesale prices. This led to the utilities accumulating enormous debt and facing severe financial problems.

These core factors provide many lessons for policymakers that have yet to face the task of implementing restructuring legislation. The best way to avoid the problems facing California is to gain a full understanding of the industry and the market in which it operates prior to enacting restructuring legislation.

III. OVERVIEW OF THE CURRENT STUDY

The focus of this study is to examine the potential impact that restructuring of the electric utility industry will have on the local governments in the state of Tennessee. There are three broad goals to the study. The first is to document and describe the current structure of the electric utility industry in Tennessee and the local revenue contributions attributed to the industry. This encompasses detailing the reliance of local governments on the revenue contributions of municipal electric utilities, cooperative electric distributors and TVA, discussing the potential consequences of stranded costs to local governments, and examining the trend of electricity usage and cost across customer classes. The second goal is to provide a discussion of the consequences of electric deregulation including the

potential impacts on local government budgets and indirect effects such as business location decisions and changes in the level of economic activity. By increasing the level of understanding of potential impacts, the study will better equip policymakers charged with addressing the issue of taxation of electric utilities in a deregulated environment. The final goal is to provide policymakers with a general framework for analyzing reform options. Included will be a discussion of issues, such as alternative taxing options and treatment of out-of-state suppliers, that should frame the deliberations regarding tax reform stemming from electric utility deregulation.

The remainder of the study is organized as follows. To better equip policymakers to deal with the inevitable task of drafting policy to guide the state and localities in the restructuring process, Chapter 2 provides a general overview of electric utility industry nationwide, TVA and the electric utility industry in Tennessee. Chapter 3 profiles local electric power distributors in Tennessee and examines the recent reliance of city and county governments on revenue contributions from electric utilities. A discussion and numerical analysis of the potential fiscal consequences of electric utility restructuring for local governments in Tennessee is provided in Chapter 4. Chapter 5 consists of a discussion of policy considerations associated with retail competition including tax reform guidelines, role of local distributors and the potential for stranded benefits,[8] along with a brief conclusion including suggestions for future studies.

[8] Under the current regulatory structure, electric utilities provide certain benefits to consumers that may be difficult to price in a competitive market. Some of these benefits are economic in nature such as high wage stable jobs. Other benefits are related to social objectives such as universal service, environmental programs, health and safety protections and low-income assistance programs. In a competitive market, the innate stability of a regulated market will be lost, and the ability to require utilities to provide to these benefits will potentially be reduced.

CHAPTER 2:
THE ELECTRIC UTILITY INDUSTRY IN TENNESSEE

I. OVERVIEW OF THE ELECTRIC UTILITY INDUSTRY

Vertical Integration

The electric utility industry has traditionally been a complex, vertically integrated industry. Electricity supply consists of three separate functions: generation, transmission and distribution. Generation of electricity involves using a variety of energy sources such as steam turbines powered by fossil fuels, nuclear fuel, internal combustion engines, and hydroelectric power. This function also includes more complex tasks such as scheduling and dispatch of power generation in order to balance loads, management of equipment failure, and power network synchronization to name a few. The second function, transmission, is the transportation of high voltage electricity between generating plants and distribution sites, and the final function, distribution, is the delivery of low voltage electricity to ultimate business and residential consumers.

Even though the production of electricity has traditionally been discussed as three distinct stages, the separation is somewhat misleading. The generation and transmission functions are interconnected from both an operational and investment perspective. Significant cost complementarities exists between the two functions since a transmission system is necessary to coordinate generating facilities in order to fulfill its role of transporting electricity. In order to maintain a reliable supply of electricity, generation and transmission facilities must operate together in an economically efficient manner.

The structure of the utilities has been driven by these operating and investment complementarities that exist between generation and transmission as well as technological advances in integrated networks that allow reduction in the cost of reliable delivery of electricity. The natural by-product of this was that most utilities became vertically integrated as far as generation and transmission were concerned. In the U.S., integration of the distribution franchises with the generation and transmission functions is common. The common ownership of all three pieces implies a lack of explicit market prices for services between the three segments. The final consumer prices are thus regulated on the basis of the costs incurred by the vertically integrated firm.

Historical Regulatory Background

In 1877, the U.S. Supreme Court issued a decision that was instrumental in developing the concept of the modern public utility. An event generally regarded as the birth of the public utility concept, *Munn vs. Illinois*, 94 U.S. 113, established the rights of governments to regulate and set rates for companies that provide essential public services in a monopolistic business setting. There were two criteria for establishing "public utility" status. First, the service provided was deemed vital to the welfare of those being served. Secondly, the providers of such service operated without direct competition.

Historically, electricity service has been considered a natural monopoly, meaning that the industry has (1) an inherent tendency toward declining long-run costs as output expands and (2) high barriers to entry into the market in the form of high threshold investment and technological constraints. However, as the industry has evolved there has been a growing challenge to the historic classification of electric utilities, in particular the generation function, as natural monopolies. These challenges

stem from technological advances, political pressures, and the changing structure of other "public utilities" such as telecommunications and natural gas. For example, the existence of electric utilities that do not own their own generating facilities, primarily cooperatives and municipal utilities, has provided evidence that vertical integration is not necessary to ensure efficient electric services. Moreover, recent changes in electric utility regulation and improved technologies have allowed additional generating capacity to be provided by independent firms rather than utilities. Given these changes, state and federal regulators have concluded that in many instances the generation of electricity no longer constitutes a natural monopoly and that competition among generators can benefit the public. However, most argue that the transmission and distribution functions should remain regulated to protect price, reliability, and safety.

The Public Utility Holding Company Act (PUHCA) and the Federal Power Act (FPA) of 1935 established a regime of regulating utilities that gave separate powers to the states and federal government. The result was a regulatory bargain between the government and utilities. In exchange for an exclusive franchise service territory, utilities were bound to provide electricity to all users at reasonable, regulated rates. Under the PUHCA and FPA, state regulatory commissions address intrastate utility activities, including wholesale and retail rate-making. State authority currently tends to be as broad and as varied as the states are diverse. In Tennessee, the Tennessee Regulatory Authority (TRA), which replaced the Public Service Commission in 1995, is responsible for setting rate and service guidelines for investor-owned electric utilities, while TVA has final oversight of distributors of its electric power. Despite the varying degrees of control exercised by the state agencies, the essential mission of the state regulator is the establishment of retail electric prices.

Under the FPA, federal regulation addresses wholesale transactions and rates for electric power flowing in interstate commerce. Federal regulation followed state regulation and is premised on the need to fill regulatory gaps resulting from the constitutional limitations on states to regulate interstate commerce. In this regime, federal regulation is limited and conceived to supplement state regulation. The Federal Energy Regulatory Commission (FERC) has the principal functions at the federal level for the economic regulation of the electric utility industry, including financial transactions, wholesale rate regulation, interconnection and wheeling of wholesale electricity, and ensuring adequate and reliable service. In addition, to prevent the recurrence of abusive practices such as cross-subsidization and pyramiding that took place in the 1920s, the Securities and Exchange Commission (SEC) regulates utilities' corporate structure and business ventures under PUHCA.[9]

For over fifty years the regulation of utilities went virtually unchanged. Then, the oil embargoes of the 1970s created concerns about the security of the nation's electricity supply and led to the enactment of the Public Utility Regulatory Policies Act of 1978 (PURPA).[10] PURPA was established primarily to augment electric utility generation with more efficiently produced electricity and to provide equitable rates to electric consumers. For the first time, investor-owned utilities were required to purchase power from outside sources known as qualifying facilities (QF).

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[9] Large powerful trusts controlled the Nation's electric distribution network during the 1920s due to extensive pyramiding schemes. These schemes allowed many operating utilities in many areas of the country to come under the control of a small number of holding companies, which were in turn owned by other holding companies. These pyramids were sometimes ten layers thick. The size and complexity of these huge trusts made industry regulation by the state regulators impossible.

[10] PURPA was one of five different statutes in the National Energy Act which was signed into law in November, 1978.

In addition to PURPA, the Natural Gas Policy Act of 1978 (NGPA) helped qualifying facilities to be established. QFs, which by definition are not utilities, were able to take advantage of abundant natural gas as well as new generating technology to generate additional power. Utilities were not permitted to use natural gas to fuel new generating technology under NGPA. These technologies lowered the financial threshold for entrance into the electricity generation business as well as shortened the lead time for construction of new plants. By the time NGPA was repealed, QFs and small power producers had already secured a role in electricity supply.

The influx of non-utility produced power challenged the cost-based rates that previously guided wholesale transactions. Prior to PURPA, FERC approved wholesale interstate electricity transactions based on the sellers' costs to generate and transmit the power. As more non-utility generators entered the market in the 1980s, the use of cost-based rates was brought into question. Since non-utility generators typically do not have enough market power to influence the rates they charge, FERC began approving certain wholesale transactions wherein rates resulted from a competitive bidding process, in other words market-based rates. This was the first incremental change to traditional electricity regulation towards a market-oriented approach to electricity supply.

Following the enactment of PURPA, two basic issues stimulated calls for further reform: (1) whether to encourage non-utility generation of electricity and (2) whether to permit electric utilities to diversify into non-regulated activities. As a result, the next major piece of legislation regarding the regulation of electric utilities was the Energy Policy Act of 1992 (EPACT). EPACT removed several barriers to entry into the electricity generation market in an effort to increase competition. Specifically, the act provided for the creation of new entities, called "exempt wholesale generators," that can generate and sell electricity at wholesale without being regulated as utilities under PUHCA. Additionally, EPACT provided this new class of generators with a way to assure transmission of their wholesale power to a wholesale purchaser. However, the act did not allow for FERC to mandate that utilities transmit the power generated by exempt wholesale generators to retail customers. Regulation of transmission at the retail level remained under the authority of state regulators.

As a result of EPACT, FERC issued Orders 888 and 889 in 1996. The purpose of these orders was to "remedy undue discrimination in transmission services in interstate commerce and provide an orderly and fair transition to competitive bulk power markets."[11] Under Order 888, the Open Access Rule, transmission line owners are required to offer both point-to-point (for direct-serve customers) and network transmission services under comparable terms and conditions that they provide for themselves. The Rule establishes a single tariff with minimum conditions for both network and point-to-point services and the non-price terms and conditions for providing these services. The Rule also allows for full recovery of stranded costs (i.e., generation assets that are no longer viable in a competitive market environment), with those costs being paid for by wholesale customers wishing to leave their current supply arrangements. Wholesale customers view this as unfair and burdensome, while generators contend that customers under contract incurred capital investments while assuming wholesale acquisition of the electrical power at the time of construction.

Order 889, the Open Access Same-time Information System (OASIS) rule, establishes the standards of conduct to ensure a level playing field between the different classes of generators. The Rule

[11] *Energy Information Source*, U.S. Department of Energy (October 1999).

requires each utility that owns, operates or controls facilities used for transmission of electric energy in interstate commerce to create or participate in an electronic information system that will provide open access transmission and potential open access customers with information relating to available transmission capacity, prices and other information deemed necessary to enable customers to obtain open access, non-discriminatory transmission services. The effect of Order 889, combined with Order 888, is to open the door for direct choice of supplier by retail customers by ensuring open access transmission mechanisms for all generators of electric power.

Implementation of retail choice has been left up to the states. States, municipal utilities and rural cooperatives currently have full discretion in deciding if and how to implement retail choice. As a result, both the degree and manner of implementation of retail choice varies considerably across the U.S. As of May 2001, twenty-three states and the District of Columbia had enacted restructuring legislation, one state had issued comprehensive regulatory orders, and the remaining states, including Tennessee, had ongoing commission or legislative investigation.[12] Many local governments in the states that have already implemented electric utility restructuring and retail choice have experienced substantial reductions in their revenue collection. For example, localities in Illinois have endured reductions as high as 49 percent of their total general revenue as result of reduced collections stemming from electric utilities[13]. In an effort to avoid this problem, Pennsylvania's approach to utility restructuring included a set of tax provisions designed to forestall any major tax revenue shortfall due to falling prices, lack of nexus to tax out-of-state generators and other changes. Under the state constitution, local governments are prohibited from directly taxing electric utilities in Pennsylvania. The public utility realty tax (PURTA) substitutes for local property taxes on utilities and is distributed from the state to local governments based on a formula. The calculation of PURTA was adjusted throughout restructuring to ensure revenue neutrality for the localities.[14] The impact that restructuring will have on tax revenue will depend on the way in which electric utilities are taxed within the state. For Tennessee, the changes could be dramatic given that the current revenue contributions going to localities are predominantly regulated by TVA. If TVA is restructured in a manner which allocates more regulatory control to the state, the rules governing revenue contributions can be expected to change.

Impact on Tennessee

The State of Tennessee falls into the class of states that are at the earliest stage of restructuring, thus offering the opportunity for learning from the experiences of other states and improving policy design and implementation. A special joint committee on utility deregulation issues has been created by the General Assembly to examine how electric utility deregulation should be approached. Tennessee's electric industry differs from the remainder of the U.S. due to the existence of TVA. Most customers in the U.S. purchase electricity from integrated utilities, meaning that one utility owns all three stages of production. However, in Tennessee, TVA provides power with an integrated *generation* and *transmission* system for 98 percent of the state; *distribution* is then carried out by municipal utilities, electric cooperatives or an investor-owned utility (IOU). For its distributors, TVA acts as the regulator for the system's rates and reliability. Because TVA is under federal control, it is exempt from PURPA, EPACT, and Orders 888 and 889. Additionally, FERC has

[12] Energy Information Administration, U.S. Department of Energy (June 2001).
[13] "Electric Utility Taxation Under Deregulation," *State Tax Notes* (January 18, 1999): 177-19
[14] Daniel Hassell, "Switching on Competition: The Tax Implications of Consumer Choice in Pennsylvania," *State Tax Notes* (July 21, 1997): 179-184.

authority over power that travels through TVA's transmission system but does not have control over the power as it flows to TVA's distributors. However, TVA is restricted in that it can only sell electricity within a defined geographic territory. The resulting service area is bound by what is commonly referred to as the "fence." Because of the uniqueness of electric power supply in Tennessee, the state faces many uncertainties regarding retail choice and restructuring in the electric industry. For example, TVA has regulatory authority over the rules of operation and rate structures of municipal electric utilities, while in most other states, a state regulatory agency is the primary authority. The role of Tennessee's state agency, the Tennessee Regulatory Authority, is confined to oversight of the investor-owned utilities that service the two percent of the state not in the TVA service area. In addition, restructuring is primarily a state-level issue; however, because of the federal domain over TVA, the form and the consequences of restructuring in the state depend, in part, on actions taken at the federal level concerning TVA.

Operational Features of the Electric Utility Industry

Pricing in the Electricity Industry

Under the current regulated environment, electricity prices are based on average costs of producing and delivering electricity to consumers. The costs include a regulated rate of return on the utility's investments in plant and equipment. In a competitive environment, marginal cost pricing will prevail in the electric generation market. The price will be equal to the marginal operating cost of the most expensive generator that remains viable in the competitive environment. If the demand approaches capacity, the price will rise due to higher operating costs of peak load generating capacity. The higher prices will encourage some consumers to reduce usage, thus allowing the market to clear.

Electricity prices are theoretically expected to be lower under competition. In most parts of the country, new low-cost generating technologies and low fossil fuel prices have made power from new plants cheaper than power from older existing plants. However, prices can also be higher under competition if operating and capital costs of existing plants are low and the marginal cost of electricity is higher than its average cost. In general, most analysts agree that prices for large industrial and manufacturing customers will decline while residential and small commercial users could potentially experience increases in their rates. The effect of competition on rates will depend in large part on the level of rates prior to restructuring. For example, users in a region where pre-competitive rates were higher than the national average are more likely to see declining rates than users in a region where rates are already below the national average. Potential changes resulting from a competitive pricing environment include:

1). Prices will be volatile and will vary by time-of-day and across seasons, initially confusing consumers but eventually offering them a chance to save money by rescheduling usage;
2). Different levels of electricity service based on level of reliability and price may be offered to consumers;
3). Investment in new generating capacity will depend on the level of electricity prices and the profitability of the utilities and not necessarily on the needs of the consumers as in the case of regulation and the provision of universal coverage;
4). Competitive pricing will put considerable pressure on suppliers to reduce the cost of

producing electricity.[15]

The price of electricity under a competitive regime can be expected to differ by region based on differences in marginal costs.

The Problem of Stranded Costs

The important task with regard to competition is coming up with an acceptable market structure and engineering a smooth transition to the new regime. A major problem for states desiring to make the transition is the stranded costs or investment problem. Stranded costs are defined as the investments or cost commitments made by existing utilities under the current structure of cost-of-service regulation which will not earn their expected rates of return from the electricity prices that are expected to prevail under competition.[16] Stranded costs are the difference between average cost (price under regulation) and marginal cost (price under competition) pricing schemes and represent sunk costs for the incumbent utilities. In general, stranded costs are associated with generating facilities and not expected to be pertinent to transmission or distribution facilities. To the extent that generation costs are greater than market value, the question is whether such costs should be distributed back to consumers or retained by utility shareholders.

There is much debate about whether investors should be compensated for stranded costs. The argument against compensating the utilities is that the investors bear the risk of losses and gains in all industries and investors in utilities should do the same. Granting the right to recovery of stranded cost would represent special insulation from losses relative to investments in other industries and should not be provided. The argument in favor of paying for the stranded costs is that implicit and explicit promises have been made by regulators to provide a predetermined rate of return on investments. Moreover, many investments were coupled with long-term contractual commitments with wholesalers and distributors. Investment costs can only be recovered if the regulated monopoly regime is allowed to continue or if transition subsidies are extended.

Regardless of the arguments for or against recovery of stranded costs, it is reasonable to assume that competition will be difficult to implement without some recovery mechanism. A major obstacle to addressing stranded costs is the measurement of such costs. Stranded cost measurement has three different dimensions.[17] The first is whether to use the *bottom-up* or the *top-down* approach. The bottom-up approach involves calculation of the amount of each investment that would be stranded while the top-down method requires the calculation of the aggregate difference between the regulated rate and the market rate for utilities. The second measurement choice is whether to determine the magnitude of the costs before or after the onset of competitive pricing. The third dimension to the measurement of stranded costs involves the determination of asset values based either on administrative estimates or on market valuations. These three dimensions can be combined in different ways, thus establishing a matrix of alternative measurement schemes.[18]

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[15] "Potential Fiscal Impacts of Electric Utility Deregulation on Florida's Public Education Capital Outlay (PECO) Program," Office of Economic and Demographic Research, The Florida Legislature (December 1998).

[16] "Estimating Potential Stranded Commitments for US Investor Owned Electric Utilities," Oak Ridge National Laboratory (January 1995).

[17] "The Changing Structure of the Electric Power Industry: An Update," U.S. Department of Energy, Energy Information Administration, Office of Coal, Nuclear, Electric and Alternative Fuels (December 1996).

[18] "Estimating Potential Stranded Commitments for US Investor Owned Electric Utilities," Oak Ridge National Laboratory (January 1995).

Once stranded costs have been quantified, there are the questions of who will pay, how payment will be made, and the proportions paid by each group. The list of candidates who will pay for stranded costs includes utility shareholders, consumers, independent power producers, and the local, state, and federal governments. After determining the portion of stranded costs to be born by consumers, there are several mechanisms by which the costs may be collected. They include (i) sunk charges based on past use, (ii) exit fees, (iii) fixed access fees, and (iv) surcharges based on usage. Dealing with stranded costs is an important issue due to the implications they will have on prices resulting from competition in the electric utility industry in the short run.

Models of Competition

Competition in the electricity market can be structured in a variety of ways. In broad terms, competition in the electric generation market can occur at the wholesale level or at the retail level. Under wholesale competition, utilities would continue to provide exclusive retail service to consumers but purchase electricity in a competitive wholesale environment. This type of competition is currently in place in several states. Retail competition implies that customers have the option of purchasing electricity from producers other than the traditional local provider. These producers could be power generators, utilities from neighboring service areas, or utilities from other states. The role of distribution companies changes depending on the type of competition taking place. Under wholesale competition, the distribution companies carry power to the ultimate consumers through wire owned by the distribution companies. Under retail competition, the distribution company provides wire service only, which can be used by consumers to get power from any entity they choose.

Wholesale Competition

The structural characteristics of the electric power industry allow for the introduction of competition at different levels provided that generation, transmission and distribution are unbundled and treated as separate goods and services. Competition at the wholesale level implies no direct choice of electricity supplier for the retail customer. Two basic models of wholesale competition have emerged— poolco and bilateral contracts.[19] In summary, the poolco model requires the pooling of all power generation. An entity called poolco would be responsible for controlling supply based on price bids by the power generating companies. Normally, the transmission system operator would be part of poolco. In the wholesale bilateral contracts model, distribution companies procure generation through bilateral commodity contracts with specific electricity producers. The transmission system operator, as in the poolco model, controls the dispatch of generation.

Both models require the formation of Independent System Operators (ISO). In the poolco model, the ISO would be responsible for running hourly sealed bid-type auctions aimed at supplying energy to meet demand a day ahead of time. The ISO would then dispatch sufficient power to meet projected demand based on a generation supply curve arranging bids in order from lowest to highest. Under the bilateral contracts model, the ISO's primary responsibility would be to manage imbalances between contracted delivery volume and actual consumption. This would be accomplished with accompanying contracts with other generators capable of filling short-term supply needs. Unlike the poolco model, the ISO does not have the responsibility of determining the supply curve of electricity and managing the dispatch order of generators.

[19] These models are also applicable to retail competition since retail electricity trade requires mechanisms to facilitate transactions and to coordinate with the grid management system.

Overall, it appears that transaction costs would be lower under a more centralized poolco model due to the pooling activity of the ISO. The bilateral contracts model appears to offer more business opportunities for the middleman to seek out ways of reducing transaction costs but does not require the existence of multiple pooling agents to manage all the contracts and deal with billing and metering of individual consumers.

Retail Competition

If competition was taken to the next step and final consumers were free to contract directly with power generators, full-fledged retail competition, or *retail wheeling* would occur. Electricity would be transmitted and distributed by regulated natural monopolies but electricity pricing would be unbundled into delivery and commodity components. The commodity prices would be set in competitive markets by contracts while transmission, local distribution, and network charges would be set by a regulatory agency.

Retail wheeling can be limited or partial, depending on which consumers are permitted to purchase electricity directly. For example, retail competition could start with large industrial companies contracting directly with electricity suppliers.[20] Residential and commercial customers are likely to require a third-party aggregator to combine the load of several consumers and negotiate prices with electricity producers. The local distribution company would be the likely candidate to perform this function along with its regulated role of providing low-voltage distribution of electricity within its service area.[21]

Retail wheeling is considered to have the advantage of not requiring central planning for power supply resources since customers and suppliers will communicate directly. This direct interaction of market participants may allow for better matching of supply and demand and potentially alleviate the need for expensive excess capacity. The disadvantage of retail wheeling stems from the inability of small consumers of electricity to take advantage of time-of-use pricing due to small lead times and high metering costs whereas large industrial consumers can reschedule their consumption to take full advantage of such pricing. This situation could potentially lead to low income consumers being hit harder by higher prices during peak demand times.

[20] In fact, this situation already occurs. For example, in 1997, TVA serviced 23 industrial customers and 4 Federal customers directly in the State of Tennessee. These direct-service customers purchased over eight million megawatt-hours from TVA and represented approximately nine percent of electricity sales in Tennessee for that year (EIA, *Electric Sales and Revenue, 1997*, October 1998).

[21] "Potential Fiscal Impact of Electric Utility Deregulation on Florida's Public Education Capital Outlay Program," Office of Economic and Demographic Research, The Florida Legislature (December 1998).

II. THE ELECTRIC UTILITY INDUSTRY IN TENNESSEE

The Role of the Tennessee Valley Authority

The Tennessee Valley Authority (TVA) is the nation's largest electric power generating system and is a corporate agency of the federal government. Created by an act of Congress on May 18, 1933, TVA supplies the electric power needs of approximately three million industrial, commercial, and residential customers in its 80,000 square-mile region that encompasses virtually all of Tennessee and portions of six adjoining states[22] (see Figure 1).

Figure 1 : Map of Tennessee Valley Authority Region

TVA's generating capacity consists of more than 32 million kilowatts, 55 percent of which is in 12 coal-fired steam plants, 18 percent in two nuclear plants, and 10 percent in hydroelectric dams. The remainder is provided by four gas turbine installations and one pumped-storage hydro plant. Electric power generated in any portion of the TVA region may be directed to other places in the system based on need and availability. More than 10,000 of the agency's 17,000 miles of transmission lines

[22] *Tennessee Valley Authority Handbook*, Tennessee Valley Authority Technical Library (May 1997). The six other states include the northern portions of Alabama, Georgia, Mississippi, segments of North Carolina and Virginia, along with parts of Southern Kentucky.

are located in Tennessee. TVA has interchange arrangements and interconnections with 15 neighboring utilities so that it may exchange power with other utilities when necessary.

Currently, TVA operates and maintains all of the generation and transmission facilities within its region. It sells power to distributors at rates controlled by its mandate under federal law and the decisions of the TVA Board. The presence of the "fence" around its region prevents the entry of new power suppliers over TVA's transmission grid for direct sale to distributors or end users. Rate increases to end-users must be agreed upon by TVA under its contracts with distributors.

Distribution of Power

TVA power is distributed by 159 municipal and cooperative distributors throughout its region. Of those, 110 are municipal distributors and the remaining 49 are cooperatives. In Tennessee, there are 63 municipal systems and 23 rural cooperatives that buy their power from TVA. The only major exception is the greater Kingsport area, which is serviced by Kingsport Power, a distributor owned by American Electric Power. Other areas serviced by investor-owned utilities include 60 customers in West Tennessee and 5 customers in Claiborne County.[23]

Municipalities are the largest distributors of TVA power. The largest municipally owned utilities in Tennessee in terms of kilowatt hours sold are Memphis, Nashville, Chattanooga and Knoxville, respectively. These four cities are responsible for over 40 percent of all electricity consumed by TVA municipalities.[24] Rural cooperatives comprise the second class of distributors. Cooperatives generally serve rural districts and therefore cover greater geographic area (but often fewer people) than municipalities. Cooperatives are owned by their members or customers and are governed by a board of directors elected by the members. The three largest cooperatives in Tennessee are Middle Tennessee Electric Membership Corporation in Murfreesboro, Volunteer Electric Cooperative in Decatur and Cumberland Electric Membership Corporation in Clarksville. The final class of customers of TVA power is direct-served clients and consists of large industrial customers and federal agencies. These clients are generally high energy consuming industrial firms that can negotiate good rates.

Tax Payments

TVA is a federal corporation and as such is exempt from several federal, state, and local taxes. Nonetheless, TVA makes payments-in-lieu of taxes (PILOTs) to states, counties and cities in its service region. The funds going to the state, as well as most local jurisdictions, flow into the general fund of the jurisdiction. The payments, set forth in the Tennessee Valley Authority Act, Section 13, are equal to five percent of TVA's gross receipts. In 1998, tax-equivalent payments made by TVA amounted to nearly $180 million in Tennessee and $264 million in the entire TVA region.

[23] Tennessee Comptroller of the Treasury, "The Potential Impacts of Electric Industry Restructuring in Tennessee" (2000).
[24] TVA Annual Report, 1998.

The Tennessee State Revenue Sharing Act[25] defines the basis for apportionment of the State's TVA PILOTs above the level received for the 1976-77 fiscal year in the following manner:

1). Forty-eight and one-half percent (48.5%) shall be paid to or retained by the State of Tennessee;
2). Forty-eight and one-half percent (48.5%) shall be paid to the counties and municipalities of Tennessee; and
3). Three percent (3%) shall be paid to impacted local governing areas which are experiencing TVA construction activities on facilities to produce electricity. Such areas are designated by TVA.

The portion of the PILOTs designated for counties and municipalities are apportioned based on the following formula:

1). Thirty percent (30%) is paid to counties based on the percentage that the population of each county bears to the total state population;
2). Thirty percent (30%) is paid to counties based on the percentage that the total acreage in each county bears on the total acreage of the state;
3). Ten percent (10%) is paid to each county containing land owned by TVA based on the percentage that TVA owned land in that county bears on total TVA owned land in Tennessee; and
4). Thirty percent (30%) is paid to incorporated municipalities based on the percentage of population of that municipality relative to the population of all incorporated municipalities in Tennessee.

Adjustments to this formula include a monthly deduction of $4,462 from payments made to counties and incorporated municipalities based on population shares, which is appropriated for use by the Tennessee Advisory Commission on Intergovernmental Relations.[26] Furthermore, for purposes of calculation, only the population and acreage contained within the TVA electrical service area are included.

The 3 percent allocated for impacted areas is determined by TVA based on their construction activity. No individual county or municipality can receive greater than ten percent of the total amount allotted for impacted areas. Payments to impacted areas are made during the period of construction activity and for a period of three full fiscal years after completion of construction. Payments will be phased out over this three-year period by decreasing the last payment made during construction by 25 percent per year. If, in any year, there are funds remaining after allocation has been made to impacted areas, the funds are allocated to the comptroller of the University of Tennessee for use in operating the County and Municipal Technical Assistance Service Agencies (CTAS and MTAS). This allocation is not to exceed twenty percent of the total available funds for impacted areas. In the event that it does, the remainder will be allocated to the Tennessee Advisory Commission on Intergovernmental Relations.[27]

[25] *Tennessee Code Annotated* § 67-9-101.
[26] Provided by Title 4, Chapter 10, Part 1.
[27] *Tennessee Code Annotated* § 67-9-102.

The level of revenue contributions arising from TVA in the future will depend on the degree of restructuring that takes place. If the TVA fence is brought down, allowing IOU's to sell inside the TVA region and TVA to sell outside the region, it is likely that tax laws would have to be structured in a manner which treated all suppliers equally in order not to give any one a competitive advantage. For example, if TVA is privatized, it should then be subject to the business franchise and excise tax, thus raising the corporate excise tax base. However, the payments in lieu of taxes currently paid by TVA is based on gross receipts and any payments based on gross receipt can be expected to change to the extent that competition changes total revenues. Tax implications of restructuring will be examined in more detail in a subsequent chapter. TVA also makes PILOTs directly to county governments.[28] These payments are in-lieu of property taxes and are based on the level of property taxes at the time the land was acquired, totaling only $1.5 million.[29]

In addition to TVA PILOTs, other electric power providers in Tennessee make revenue contributions to the state and local governments. Investor-owned utilities (IOUs) pay franchise, excise, gross receipts, local property, and sales taxes. The state also imposes corporation and public service commission fees on these entities. In 1998, the five IOUs operating in Tennessee paid over $4.8 million in state and local taxes and fees.[30] Power marketers and non-utility generators are subject to business (franchise and excise), sales and local property taxes. Both are generally exempt from the gross receipts tax. It is important to note that all electric power suppliers pay unemployment taxes and social security for their employees.

Local Electric Utilities

Municipal Electric Utilities

The Municipal Electric Plant Law of 1935 gave municipalities in Tennessee the authority to acquire, improve, operate and maintain within the corporate or county limits of the municipality an electric plant and to provide electric service to any person, firm, public or private corporation, or to any other user or consumer of electric power and energy for a charge. Furthermore, such counties and municipalities can also operate outside the county or corporate limits with consent of the other jurisdiction. The municipalities have control over the method of holding title, allocation of responsibility for operation and maintenance and for the allocation of expenses and revenues.[31] The act also dealt with issues such as debt, administration and compensation, and acquisition of land and property. Currently, there are 63 municipally owned electric utilities and 23 rural cooperatives in the state of Tennessee (see Table 1).

[28] In the past, TVA has made selective payments to municipalities (most notably Knoxville) but these were considered good-will payments and have been or are currently being phased out. (conversation with Don Holt of TVA's general accounting office, July 19,2001.)

[29] TVA General Accounting Office, *Payments to Individual Counties*.

[30] Data compiled from the Federal Energy Regulatory Agency Form 1 and the Tennessee State Board of Equalization, 1998 Tax Aggregate Report.

[31] *Tennessee Code Annotated* § 7-52-103.

Table 1: Local Electric Distributors in Tennessee, 2000

Municipal Electric Utilities

Alcoa	Greeneville	Newbern
Athens	Harriman	Newport
Benton County	Humboldt	Oak Ridge
Bolivar	Jackson	Paris
Bristol	Jellico	Pulaski
Brownsville	Johnson City	Ripley
Carroll County	Knoxville	Rockwood
Chattanooga	Lafollette	Sevier County
Clarksville	Lawrenceburg	Shelbyville
Cleveland	Lebanon	Smithville
Clinton	Lenoir City	Somerville
Columbia	Lewisburg	Sparta
Cookeville	Lexington	Springfield
Covington	Loudon	Sweetwater
Dayton	Maryville	Trenton
Dickson	McMinnville	Tullahoma
Dyersburg	Memphis	Union City
Elizabethton	Milan	Weakley County
Erwin	Morristown	Winchester
Etowah	Mount Pleasant	
Fayetteville	Murfreesboro	
Gallatin	Nashville	

Electric Cooperatives

Appalachian Electric Coop	Gibson Electric Memb. Coop	Valley Electric Coop
Caney Fork Electric Coop	Holston Electric Coop	SW TN Electric Coop
Chickasaw Electric Coop	Meriwether Lewis Electric Coop	TN Valley Electric Coop
Cumberland Electric Coop	Middle Tennessee Electric Coop	Tri-County Electric Coop
Duck River Electric Coop	Mountain Electric Coop	Upper Cumberland Coop
Forked Deer Electric Coop	Pickwick Electric Coop	Volunteer Electric Coop
Fort Loudon Electric Coop	Plateau Electric Coop	

The governing body of municipal utilities is the supervisory board, which is made up of members appointed by the governing body of the municipality. The members must be residents of the municipality. If the municipality employs a city manager, that person may serve on the electric utility board. The board is responsible for appointing a superintendent who is qualified by training and experience for the general supervision of the acquisition, improvement, and operation of the electric plant. The superintendent is not required to be a resident of the municipality at the time of appointment. The supervisory board and superintendent exercise all powers on behalf of the owning municipality. These powers include the setting of rates in cooperation with TVA, with TVA possessing final approval of rates. In addition, the supervisory board is required to charge the municipality and all departments and works thereof for any electric service furnished to them, at rates applicable to other customers receiving similar services.[32]

[32] *Tennessee Code Annotated* § 7-52-116.

Tax Payments

According to Tennessee Code Annotated §7-34-116, municipally owned electric utilities are exempt from federal, state and local taxes. However, TVA requires its distributors to make tax-equivalent payments.

In Tennessee, PILOTs are based on the following formula:

1). the equalized property tax rate of the respective jurisdiction in which the municipality's electric system is located multiplied by the net plant value of the electric plant and the book value of materials and supplies within the taxing jurisdiction as of the beginning of the fiscal year; and
2). four percent of the average of operating revenue from electric operations minus the costs of power purchased from TVA for the preceding three fiscal years.

Payments of PILOTs are made only after all operating expenses, current payments of interest on indebtedness, reasonable reserves for renewals, replacements and contingencies, and cash working capital adequate to cover operating expenses for a reasonable number of weeks are met. These payments are in lieu of *all* state, county, city and local taxes *paid* by the electric utilities and do not include those taxes *collected* by utilities. In 1998, the tax equivalent payments totaled more than $76.5 million.[33] Tax-equivalent payments are distributed to the owning municipality, county governments and any other taxing jurisdiction in which the utility operates or owns facilities. The recommended arrangement specifies that twenty-two and one-half percent (22.5%) of the total PILOT be allocated to county taxing jurisdictions based on the proportion of the ratios of net plant value and total book value of materials and supplies in qualifying counties. The remaining seventy-seven and one-half percent (77.5%) is distributed to municipalities based on the same criteria. It is important to note that payments going to taxing jurisdictions other than the owning municipality include only an amount equal to the equalized property tax rate multiplied by the net plant value and the book value of supplies and materials. The payments do not include any portion of the PILOT derived from operating revenue.[34] Local jurisdictions may choose to share the PILOTs based on some other agreed upon formula.

The revenue contributions of municipal distributors could change dramatically under restructuring. If TVA is relieved of its regulatory power then the regulated PILOTs will also cease. State and local policymakers will have the responsibility of determining the taxes to impose on municipal distributors, and given the unbundling of prices that will accompany restructuring, the ability to impose "hidden" taxes via higher electric rates will be greatly reduced. Again, a detailed discussion of tax implications will be presented in a subsequent chapter.

Rural Electric Cooperatives

Rural electric cooperatives are customer-owned, non-profit corporations. As such, they are exempt from federal and state income taxes but are subject to ad valorem property taxes assessed by the state and payable to cities and counties. However, all facilities and plants are exempt for the first four years following construction.[35] In 1998, Tennessee rural cooperatives paid $12.6 million in taxes to

[33] Tennessee Valley Authority, Annual Report for 1998.

[34] *Tennessee Code Annotated* § 7-52-307.

[35] *Tennessee Code Annotated* § 65-25-222.

the cities and counties in which they are located.[36] The method of assessing electric utility property in Tennessee is the same regardless of the ownership status. The state appraisal ratio for public utility property is fifty-five percent (55%). The utilities are assessed based on net plant value of electric plants and the book value of construction work in progress. Net plant value is defined as the depreciated original cost of the electric plant, both for portions in service and those held for future use. Non-operating property is appraised annually and assessed in the same manner as other locally assessed property. Along with the general schedule and statement of properties owned, electric utilities must also submit the following: (i) the number of miles of poles and wires of its entire system, the nature of its wire system and the number of miles inside and outside the corporate limits of the city or town in which its property is located, (ii) the total number of transformers owned by the company, their location and their value, (iii) the description and location of all of its property, real and personal and (iv) the gross income of the company from its operation and from all other sources and its operating expenses.[37]

Sales Tax Payments

In addition to direct payment of taxes or tax-equivalent payments, electric utilities collect revenue for state governments via the sales tax on electricity.[38] Under the current system, only sales to commercial establishments are subject to the full 6 percent state sales tax rate. Sales to residential customers as well as government agencies are exempt from the sales tax, and sales to industrial and manufacturing customers are generally taxed at a reduced rate of 1.5%. Despite these substantial reductions in the base, the sales tax on electric services generated more than $76.5 million in state and local revenue in 1998.[39] Under restructuring, sales tax revenue will be vulnerable to revenue stream risks including unbundling of services and nexus issues.

[36] State of Tennessee Comptroller of the Treasury, Office of State Assessed Properties, *1998 City and County Taxes by Company.*

[37] *Tennessee Code Annotated* § 67-5-1313

[38] Currently, energy sales are exempt from the local option sales tax.

[39] Tennessee Department of Revenue, Revenue Collections, June 1998.

CHAPTER 3:
A PROFILE OF THE ELECTRIC UTILITY INDUSTRY AND LOCAL GOVERNMENTS IN TENNESSEE

I. INTRODUCTION

Most electricity customers in Tennessee receive their electricity from a municipal distributor or a rural cooperative, although a few customers receive electricity from an investor owned utility or directly from TVA. Currently, Tennessee is home to 63 municipal distributors and 23 rural cooperatives. Of the 63 municipal distributors, four are county-owned government entities. The function of municipal electric utilities and rural cooperatives in Tennessee is limited to the distribution of electricity meaning that the utilities are not responsible for the generation or transmission of electricity. The limited role is a result of being located inside the TVA region and is subject to change in the era of restructuring.

II. ELECTRICITY DISTRIBUTORS IN TENNESSEE

The 63 municipal electric utilities and 23 rural cooperatives in Tennessee combined serve more than 2.5 million customers, including more than 2.2 million residential consumers, in 1998. Total sales by the distributors were more than $4.6 billion in 1998. Municipal distributors accounted for 80 percent of the sales while rural cooperatives were responsible for the remaining 20 percent.[40] Table 3.1 provides a detailed examination of 1998 sales, megawatt hours sold and customers by residential, commercial and industrial classification for both municipal and cooperative electric distributors in Tennessee. Figures 3.1 through 3.6 provide graphical illustrations of the distributor activity by customer classification for 1998.

As expected, municipal distributors derive a greater portion of their sales from commercial and industrial customers relative to rural cooperatives. For example, 58 percent of the total sales for municipal distributors in 1998 were to commercial and industrial customers compared to only 37 percent of the total sales by cooperatives. Likewise, 60 percent of the total megawatts sold by municipal distributors in 1998 were sold to industrial and commercial customers compared to 40 percent sold by cooperatives. This is true despite the fact that commercial and industrial customers comprise 14.0 percent of the total customers for cooperatives compared to 13.4 percent for municipal distributors.

[40] Data compiled from reports filed with the U.S. Department of Energy, Energy Information Administration.

Table 3.1: Statistics for Tennessee Electric Distributors, 1998

	Sales (thousands)			MWH			Customers		
	Residential	Commercial	Industrial	Residential	Commercial	Industrial	Residential	Commercial	Industrial
MUNICIPAL									
Alcoa Utilities	$ 18375	$ 9180	$ 2538	297410	142907	49448	19271	3686	8
Athens Utility Board	9177	9799	12833	143211	152518	300701	9908	2119	15
Benton County	7415	3530	2592	109996	50150	63377	8096	1511	4
Bolivar City of	9101	4544	1938	136464	64007	32568	8877	1967	4
Bristol City of	23528	13390	9257	415277	234167	217319	26293	3643	19
Brownsville City of	3614	3112	4732	61510	51505	100686	4235	874	4
Carroll County	11890	7151	4600	189270	108195	93145	12454	2612	7
Chattanooga City of	124562	113083	78468	1945841	1809276	2000000	124075	18402	96
Clarksville City of	32375	20389	8191	528984	327110	162944	35760	4804	16
Cleveland City of	20792	17629	16323	342414	286546	358994	22488	3485	30
Clinton City of	22573	10829	7891	361146	173091	161911	23966	2783	12
Columbia City of	16810	13609	2991	275687	219010	62660	18151	3344	5
Cookeville City of	8513	13809	8602	133614	220381	167662	10145	2899	16
Covington City of	2738	4000	7904	45533	66273	155610	3106	1046	12
Dayton City of	5552	4677	2871	86678	72781	54796	6782	1683	6
Dickson City of	23399	11919	9022	365450	183227	181496	23093	3874	20
Dyersburg City of	8677	7627	18443	139376	120876	414217	9704	2075	14
Elizabethton City of	18860	9225	4192	294011	138428	80732	20679	3307	10
Erwin Town of	5654	3600	3808	90657	57128	80739	7273	1131	7
Etowah City of	3634	1684	2702	58380	26898	65867	4195	591	1
Fayetteville City of	14034	6899	5185	202477	92888	94783	13498	2265	6
Gallatin City of	7813	7870	12863	137285	138341	297494	8770	1611	19
Greeneville City of	24695	15252	15511	411067	248875	352770	27206	5356	23
Harriman City of	8883	4530	2249	132046	64253	61211	9488	1333	3
Humboldt City of	3195	3650	5836	55333	64852	119054	3887	816	10
Jackson City of	22155	28527	31772	353610	463212	733570	25102	4989	51
Jellico City of	1825	1470	0	26272	20013	0	2029	370	0
Johnson City City of	49771	33083	20085	807063	533281	377957	53676	7952	33
Knoxville Utilities Board	139557	98001	56717	2240311	1591066	1000000	149931	19212	71
LaFollette City of	14834	8050	2018	220738	113219	26962	16803	2465	7
Lawrenceburg City of	15187	8393	7141	230388	116972	151151	15623	2650	13
Lebanon City of	6509	11117	5490	104324	180530	113384	7271	1877	10
Lenoir City City of	39856	27616	8194	645422	442247	150602	36795	7045	24
Lewisburg City of	3594	5127	7694	58461	82363	157179	4075	1203	14
Lexington City of	13680	8150	5555	216317	119300	101507	16342	3263	13
Loudon Utilities Board	6753	4422	9747	100184	65728	197603	6707	1097	11
Maryville Utilities	13097	11096	10322	218131	185721	233393	15441	2292	12
McMinnville Electric	4627	6126	3782	74155	93889	76190	5689	1586	8
Memphis City of	344621	278007	179633	5380911	4492845	4000000	339285	40509	268
Milan City of	6424	3624	5014	101464	57665	88072	6278	1398	9
Morristown City of	8903	15438	19522	145006	256312	395535	10943	2355	33
Mt Pleasant City of	2923	1932	960	45549	29008	19202	3114	536	4
Murfreesboro City of	22312	21980	15775	369764	376727	306630	26163	3693	25
Nashville Electric Service	266643	252084	134235	4230135	4173365	3000000	271689	34525	170
Newbern City of	1174	1194	3525	18754	19843	73252	1339	256	5
Newport City of	13888	8734	6073	206034	129582	132546	15239	3157	8
Oak Ridge City of	10605	14611	3788	165046	237559	80482	12760	1808	5
Paris City of	13467	8763	4266	224675	140706	93508	14957	3835	8
Pulaski City of	10948	7166	8131	163208	100464	184050	10857	2154	9
Ripley City of	4616	4139	6812	76222	67047	122417	5501	1270	10
Rockwood City of	10641	5876	2833	161134	87660	66663	10559	2002	5
Sevier County Electric	27845	32535	5902	442520	506825	132048	29803	7523	12
Shelbyville City of	5451	7679	8011	85757	125890	154440	6662	1213	17
Smithville City of	1344	2386	2197	21974	38665	42134	1894	541	5

Table 3.1: Statistics for Tennessee Electric Distributors, 1998 (cont.)

	Sales (thousands)			MWH			Customers		
	Residential	Commercial	Industrial	Residential	Commercial	Industrial	Residential	Commercial	Industrial
Somerville City of	955	1170	0	15753	18874	0	1051	362	0
Sparta City of	1498	2556	1785	24165	41490	34508	2026	725	4
Springfield City of	4707	5313	4259	75458	85166	79597	5322	1005	9
Sweetwater City of	5495	3715	3365	89775	58076	60403	5892	1516	5
Trenton City of	1767	2525	1348	27923	40027	25721	2015	581	2
Tullahoma	7101	8437	1311	115374	143363	25395	7917	1562	4
Union City City of	3802	4447	11859	65921	73980	287198	5102	1016	8
Weakley County	15968	9545	3930	264915	151411	74910	16187	3261	12
Winchester City of	3548	5298	765	57067	89283	13716	3877	928	3
MUNICIPAL TOTAL	**1563950**	**1281319**	**855358**	**24828997**	**20663057**	**18376426**	**1633316**	**250949**	**1274**
COOPERATIVE									
Appalachian Electric Coop	31902	11888	3872	500552	166997	81206	32082	4749	7
Caney Fork Electric Coop	21365	7737	5902	332347	107042	109334	23276	3894	9
Chickasaw Electric Coop	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A	#N/A
Cumberland Elec Member	68684	22444	11129	1072205	341650	277848	60017	9107	13
Duck River Elec Member	53428	20505	6117	798151	287510	122583	48332	7880	12
Forked Deer Electric Coop	8627	951	2240	134347	10447	50391	7993	1257	2
Fort Loudoun Electric Coop	21743	5498	1335	321134	77647	28304	20932	2603	3
Gibson Electric Members	28307	10589	6790	439665	149730	123081	27195	5090	11
Holston Electric Coop Inc	19598	6397	13123	304369	91130	276856	21561	3769	23
Meriwether Lewis Electric	24486	12238	7109	360885	165993	140314	26555	4789	16
Middle Tennessee E M C	108545	46221	25837	1811686	772652	621706	102051	13173	44
Mountain Electric Coop Inc	7965	3789	4056	116432	51364	110440	11056	1858	3
Pickwick Electric Coop	13978	8315	2323	220322	122482	41270	14813	3387	6
Plateau Electric Coop	9676	6615	2139	134607	85697	32971	12518	2268	4
Powell Valley Electric	13562	6925	1313	198253	96251	24389	15798	2382	3
Sequachee Valley Electric	23231	12653	7290	362487	190119	147078	24850	4293	13
Southwest Tennessee E M	40314	12121	4657	604601	162311	94467	34853	5990	6
Tennessee Valley Electric	13045	7957	1408	196019	113275	24715	14513	3064	3
Tri-County Elec Member	17838	9596	388	271255	133060	5664	18619	3733	2
Tri-State Electric Member	2081	1147	0	28003	14940	0	2380	396	0
Upper Cumberland E M	33289	13889	5828	501461	196017	123450	34882	5697	12
Volunteer Electric Coop	69565	28362	10624	1073192	410816	242673	75580	12500	16
COOPERATIVE TOTAL	**577962**	**236212**	**113706**	**8949074**	**3473091**	**2488200**	**574498**	**93236**	**192**

Source: U.S. Department of Energy, Energy Information Administration

Figure 3.1: Municipal Distributor Sales by Customer Class, 1998

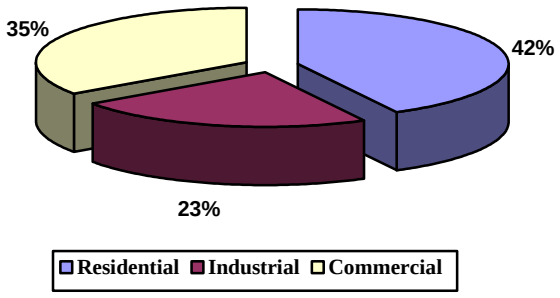


Figure 3.2: Municipal Distributor MWH by Customer Class, 1998

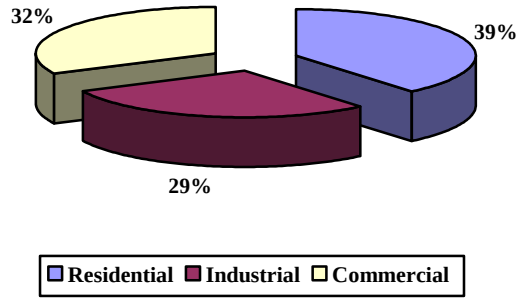


Figure 3.3: Municipal Distributors Customers by Class, 1998

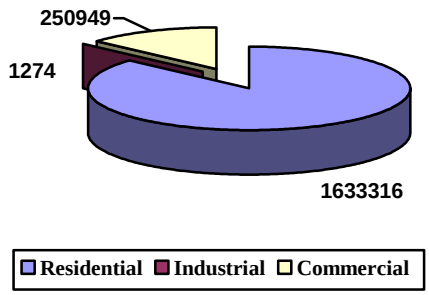


Figure 3.4: Cooperative Distributors Sales by Customer Class, 1998

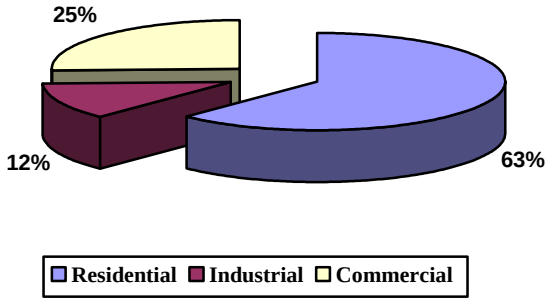


Figure 3.5: Cooperative Distributors MWH by Customer Class, 1998

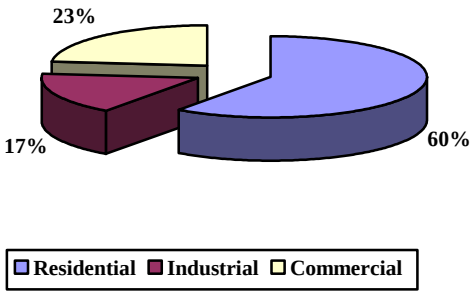
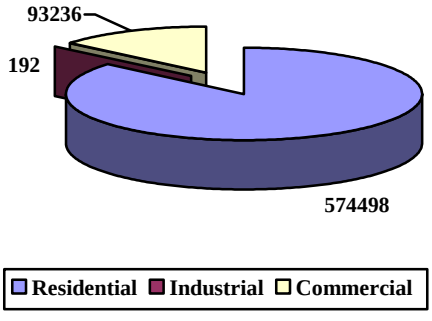


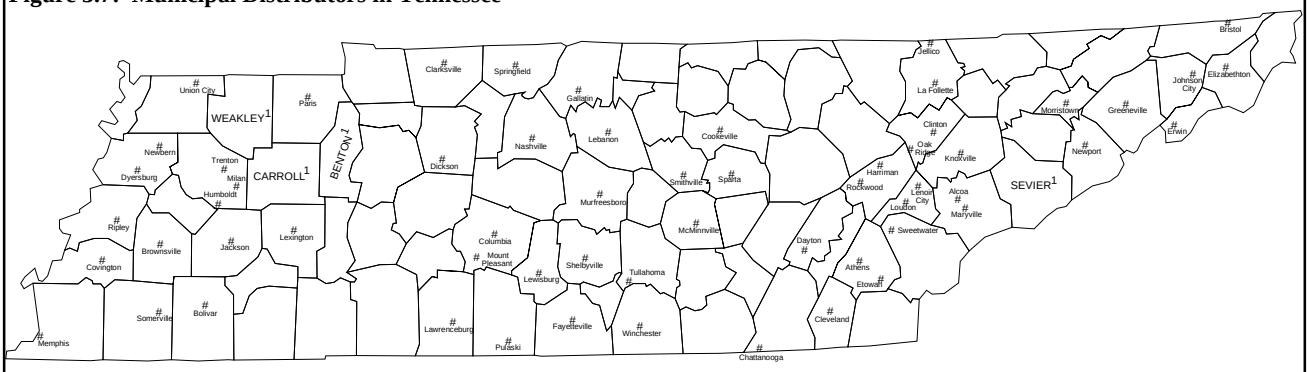
Figure 3.6: Cooperative Distributors Customers by Class, 1998



Municipal Electric Distributors

Figure 3.7 provides a map depicting the location of the municipal distributors in the state. The municipal distributors are relatively evenly dispersed between East, Middle and West Tennessee. The distributors tend to be clustered around the state's Metropolitan Statistical Areas with more rural communities being served by electric cooperatives.

Figure 3.7: Municipal Distributors in Tennessee



1. Distributors owned and operated by county government.

Sales

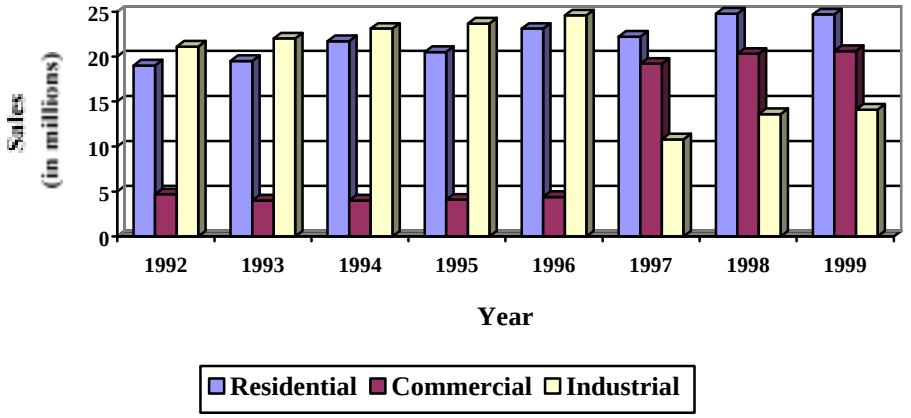
Total average sales for municipal electric distributors in Tennessee increased 24.5 percent between 1992 and 1999, fueled by a 23.1 percent increase in average residential sales. Average annual sales statistics for the municipal distributors from 1992 to 1999 for each of the three major customer classifications are provided in Table 3.2 and a graphical presentation is depicted in Figure 3.8. Close examination of the table reveals a sharp increase in sales to commercial enterprises coupled with a sharp decline in industrial sales starting in 1997. This is a result of a change in the U.S. Department of Energy's definition of industrial and commercial customers. Hence, growth rates for these individual categories for the entire time period are not comparable. Alternatively, using 1997 as the base year, average industrial sales for municipal distributors increased 23.1 percent in a two year time period while commercial sales increased by 6.8 percent. The share of sales to residential consumers remained relatively constant throughout the time period examined, displaying only a slight decline between 1992 and 1999. Since 1997, the share of sales to commercial consumers has declined while the share of sales to industrials has increased.

Table 3.2: Average Annual Sales for Municipal Electric Distributors in Tennessee (in thousands of dollars)

	1992	1993	1994	1995	1996	1997	1998	1999
Residential	$ 19024 (42.4%)	$ 19493 (42.9%)	$ 21691 (44.4%)	$ 20481 (42.4%)	$ 23130 (44.4%)	$ 22163 (42.4%)	$ 24825 (42.3%)	$ 24740 (41.6%)
Commercial	4742 (10.6%)	4023 (8.8%)	4039 (8.3%)	4079 (8.4%)	4352 (8.4%)	19202 (36.8%)	20338 (34.6%)	20598 (34.6%)
Industrial	21112 (47.0%)	21966 (48.3%)	23107 (47.3)	23730 (49.2%)	24599 (47.2%)	10839 (20.8%)	13577 (23.1%)	14092 (23.8%)

Source: U.S. Department of Energy, Energy Information Administration

Figure 3.8: Average Annual Sales for Municipal Distributors in Tennessee



Source: U.S. Department of Energy, Energy Information Administration

Megawatt Hours

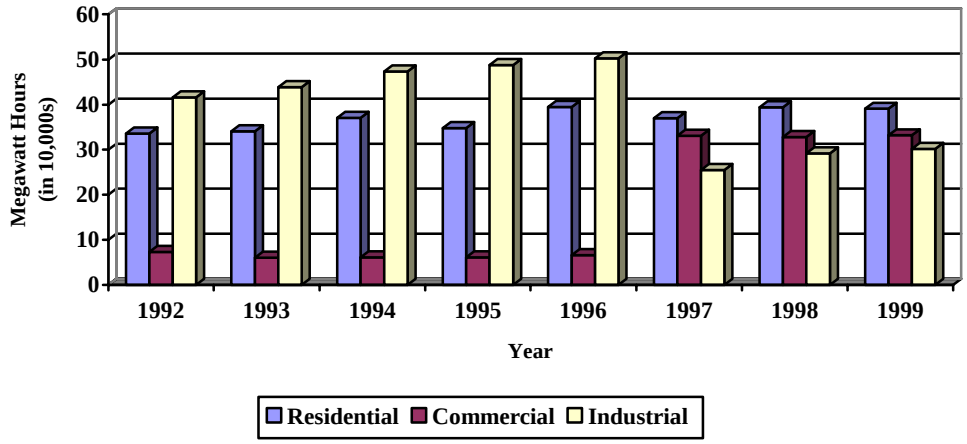
Total average annual megawatt hours sold by municipal electric distributors in Tennessee rose by 19.5 percent between 1992 and 1999. Again, the drastic change from 1996 to 1997 in commercial and industrial megawatts sold is due primarily to a definitional change by the U.S. Department of Energy. The residential sector recorded a lower increase of 14.2 percent while the combined commercial and industrial classes experienced a 22.8 percent increase. Annual averages from 1992 to 1999 for each of the three customer classes are depicted in Table 3.3 and Figure 3.9.

Table 3.3: Average Annual Megawatt Hours Sold by Municipal Distributors in Tennessee

	1992	1993	1994	1995	1996	1997	1998	1999
Residential	335552	341278	370840	347870	394724	369878	394111	391140
Commercial	73380	60399	61177	61409	65568	330574	327985	331564
Industrial	415737	439263	473769	487528	503231	255367	291689	301720

Source: U.S. Department of Energy, Energy Information Administration

Figure 3.9: Average Annual Megawatt Hours Sold by Municipal Distributors in Tennessee



Source: U.S. Department of Energy, Energy Information Administration

Number of Customers

The total annual average number of customers for municipal electric distributors in Tennessee rose by 12.1 percent from 1992 to 1999. The number of residential customers, which account for 86.5 percent of all customers, increased by 12.0 percent and the number of commercial and industrial customers combined realized a gain of 16.8 percent in the eight-year period. Comparison of disaggregated industrial and commercial customers is complicated as a result of the U.S. Department of Energy's definitional transition of customer classification in 1997. Annual averages for the number of customers by classification are detailed in Table 3.4, and Figure 3.10 provides a graphical illustration.

Table 3.4: Annual Average Number of Customers for Municipal Distributors in Tennessee

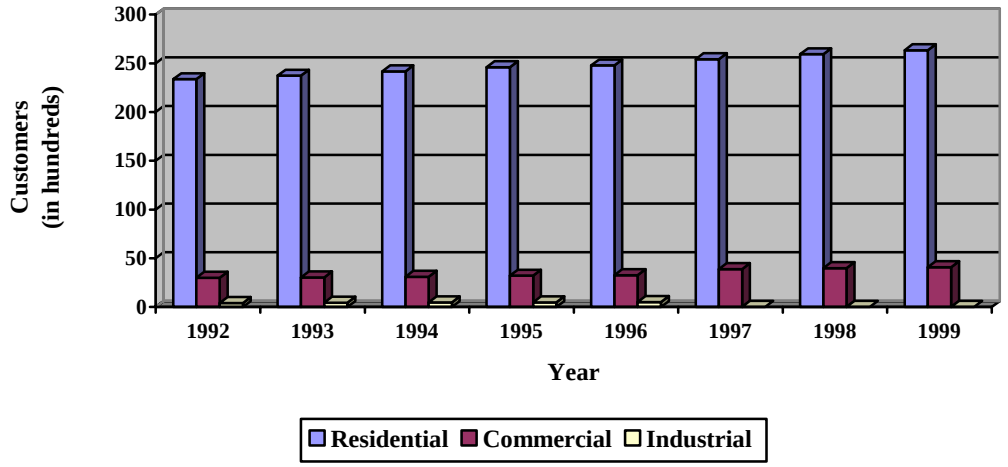
	1992	1993	1994	1995	1996	1997	1998	1999
Residential	23372	23729	24158	24594	24784	25423	25926	26354
Commercial	3004	3037	3105	3217	3259	3879	3983	4079
Industrial	402	433	481	477	494	32	19	20

Source: U.S. Department of Energy, Energy Information Administration

Cooperative Distributors

Unlike municipal distributors, rural electric cooperatives tend to be disbursed throughout the more sparsely populated counties of the state. Currently, there are 23 electric cooperatives in Tennessee, all of which purchase their electricity from TVA. They are located primarily in the rural counties in the state.

Figure 3.10: Annual Average Number of Customers for Municipal Distributors in Tennessee



Sales

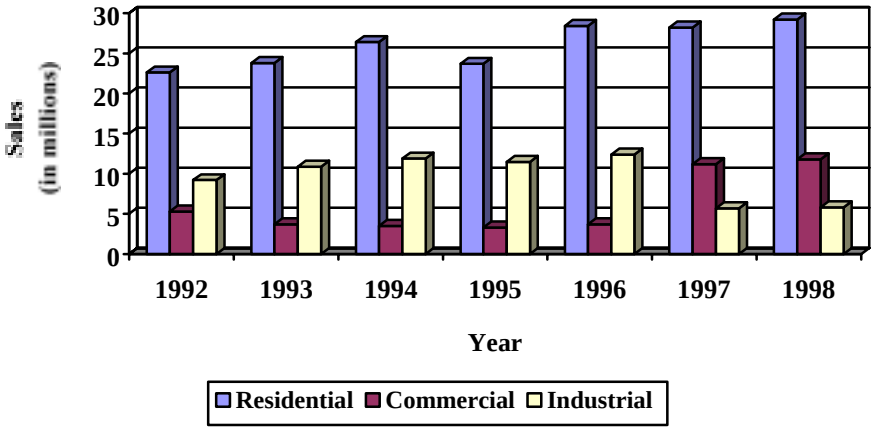
Total average sales for electric cooperatives in Tennessee increased 26.5 percent between 1992 and 1998. Average annual sales statistics for cooperative distributors for each of the three major customer classes are provided in Table 3.5 and Figure 3.11. Again, due to a definitional change, the statistics reveal a sharp increase in commercial sales coupled with a decline in industrial sales in 1997. As expected, residential sales represent a greater share of total sales for cooperatives relative to municipal distributors throughout the time period examined. More than 60 percent of the cooperatives' sales were to residential customers compared to only 42 percent of the municipal distributors' sales.

Table 3.5: Average Annual Sales for Electric Cooperatives in Tennessee (in thousands)

	1992	1993	1994	1995	1996	1997	1998
Residential	$ 22555 (59.8%)	$ 23778 (60.7%)	$ 26386 (62.1%)	$ 23707 (60.4%)	$ 28396 (62.6%)	$ 28203 (61.3%)	$ 29150 (61.1%)
Commercial	5284 (14.0%)	3664 (9.4%)	3463 (8.1%)	3275 (8.3%)	3667 (8.1%)	11241 (24.5%)	11830 (24.8%)
Industrial	9240 (24.5%)	10956 (28.0%)	11869 (27.9%)	11494 (29.3%)	12420 (27.4%)	5741 (12.5%)	5761 (12.1%)

Source: U.S. Department of Energy, Energy Information Administration

Figure 3.11: Average Annual Sales for Electric Cooperatives in Tennessee



Source: U.S. Department of Energy, Energy Information Administration

Megawatt Hours

Total average annual megawatt hours sold by electric cooperatives in Tennessee rose by 18.1 percent between 1992 and 1998. The megawatts demanded by the residential sector increased by 16.9 percent while the demand by industrial and commercial sectors combined increased by 19.0 percent during the time period. Annual averages for each of the three major customer classes from 1992 to 1998 are depicted in Table 3.6.

Table 3.6: Average Annual Megawatt Hours Sold by Electric Cooperatives in Tennessee

	1992	1993	1994	1995	1996	1997	1998
Residential	386947	401706	439768	391951	472939	456585	452411
Commercial	76961	50525	47988	44999	50658	171406	173587
Industrial	173828	211321	232369	224658	244498	135478	124963

Source: U.S. Department of Energy, Energy Information Administration

Number of Customers for Electric Cooperatives

The total annual average number of customers for electric cooperatives in Tennessee increased by 9.8 percent between 1992 and 1998. The number of residential customers, which account for 85.6 percent of all customers, experienced an increase of 9.5 percent while the number of industrial and commercial customers grew by 11.3 percent. Annual averages for the number of customers by classification are detailed in Table 3.7.

Table 3.7: Annual Average Number of Customers for Electric Cooperatives in Tennessee

	1992	1993	1994	1995	1996	1997	1998
Residential	26539	27219	27989	27041	28638	30034	29049
Commercial	4095	4122	4246	4124	4324	4811	4731
Industrial	163	260	293	278	297	43	10

Source: U.S. Department of Energy, Energy Information Administration

Electric Rates in Tennessee

Tennessee has long enjoyed electricity rates that are well below the national average. For example, residential rates in Tennessee were 32 percent below the national average in 1999.[41] However, the residential rates in Tennessee have increased an average of 11.7 percent from 1991 to 1999 whereas the national average has experienced an increase of only 1.6 percent over the same time period. Similar trends are also found with commercial and industrial rates. The national average rate for commercial and industrial customers fell by 4.6 percent and 9.3 percent, respectively. In Tennessee, the average commercial rate increased by 11.9 percent and industrial rates increased by 1.8 percent. It is important to note that the rates reported represent an average of the actual rates charged by *distributors*. The structure of rates, especially for industrial customers, is nonlinear meaning that differential rates are charged based on units of electricity consumed. Additionally, the largest of the industrial customers are served directly by TVA, thus leading to lower rates for these enterprises. As such, the average rates presented here do not represent the actual rate that a firm pays. Table 3.8 displays the recent trend in electric rates for Tennessee municipal distributors and the nation as a whole.

Table 3.8: Annual Average Electricity Rates, 1991-1999 (Cents per Kilowatt-hour)[1]

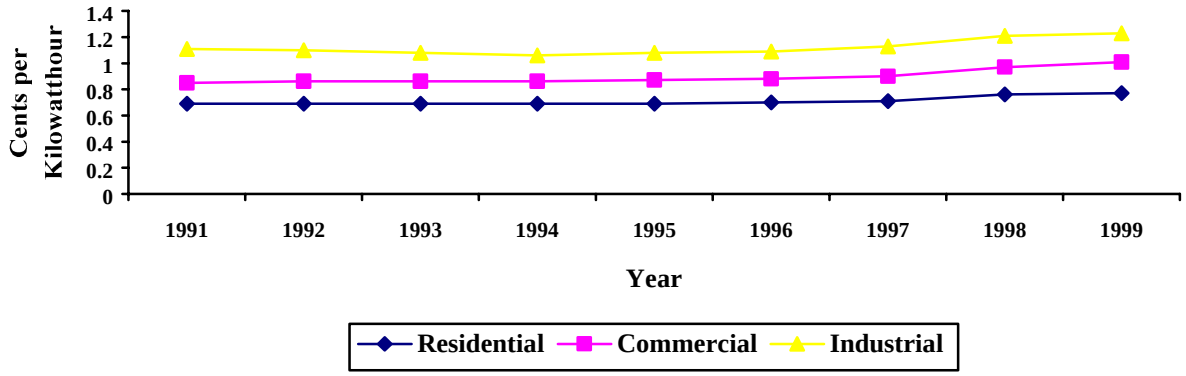
	1991	1992	1993	1994	1995	1996	1997	1998	1999
TN Residential	5.57	5.65	5.74	5.81	5.82	5.84	5.98	6.27	6.31
TN Commercial	6.42	6.62	6.65	6.63	6.66	6.70	6.86	7.18	7.29
TN Industrial	5.34	5.32	5.22	5.06	5.05	5.03	5.11	5.42	5.44
National Residential	8.04	8.21	8.32	8.38	8.40	8.36	8.43	8.26	8.17
National Commercial	7.53	7.66	7.74	7.73	7.69	7.64	7.59	7.41	7.20
National Industrial	4.83	4.83	4.85	4.77	4.66	4.60	4.53	4.48	4.42

[1] Tennessee average rates are for electricity sold by municipal electric distributors.
Source: TVA and U.S. Department of Energy, Energy Information Administration, Annual Energy Review 1999

[41] Data compiled from rates supplied by TVA and the Energy Information Administration.

Using the rates listed in Table 3.8, an index of Tennessee rates as a percent of the national average was constructed for each of three customer classifications. The indices are depicted in Figure 3.12. The index for industrial rates indicates that Tennessee rates were consistently higher than the national average rates while residential rates were more than 25 percent lower than the national average from 1991 to 1999. The implication is that industrial consumers were subsidizing residential consumers. In a competitive market, generators of electric power will target large industrial consumers by offering lower rates, potentially at the expense of residential and commercial consumers. For residents in Tennessee, lower rates for industrials would likely reduce or even reverse the subsidization process leading to increases in residential rates relative to other classes of consumers. Of course, it is important to note that the industrial rates used in this analysis do not include the rates for consumers served directly by TVA. Inclusion of these clients would potentially reduce the industrial index, thus depicting Tennessee in a more competitive position relative to the nation as a whole.

Figure 3.12: Tennessee to National Average Indices for Electricity Rates, 1991-1999



III. REVENUE CONTRIBUTIONS OF ELECTRIC UTILITIES TO LOCAL GOVERNMENTS IN TENNESSEE

In Tennessee, the manner in which electric utilities can contribute revenue to local governments is regulated by TVA and state law. As a result, local governments are unable to seek additional funds from electric utilities to supplement their general funds, thus reducing the political pressure on utilities to be revenue producers for the municipalities. However, given that a portion of the regulated PILOT is based on the level of operating profits of municipal distributors, the political pressure is not completely eliminated. The purpose of the current section is to examine the extent to which municipalities in Tennessee rely upon contributions from the electric utility industry. A more detailed discussion of the manner in which restructuring may affect PILOTs as well as other revenue sources derived from the industry will be provided in Chapter 4 of this report.

The first step in understanding the potential impact of restructuring in the electric utility industry on local governments is to document the level and significance of revenue contributions from electric utilities to local governments. All municipal and county governments receive revenue from the electric utility industry via various revenue sources regardless of whether or not they own and operate a municipal distributor. The current section will provide data only on the primary source of revenue from electric utilities for local governments in Tennessee -- the state-shared payments-in-lieu-of-taxes from TVA and municipal electric distributors and property tax revenue from rural electric cooperatives.

Municipal Data

Data necessary for the current analysis were collected by conducting a survey of the 350 municipalities located in Tennessee. Telephone calls were made to each of the municipalities to solicit copies of audited budget reports; formal letters of request were then sent to municipalities failing to respond to the initial request. Of the 350 municipalities in Tennessee, 246 (70%) submitted budget reports. A total of 222 municipalities responded by providing all of the data requested. The remaining 24 municipalities that responded were dropped from the sample due to incomplete data resulting from lost records or lack of tenure as an incorporated entity. A list of the municipalities not included in the sample is provided in Table 3.9. The non-responding municipalities are primarily smaller communities with a mean population of 1,955 in 1998 compared to 12,929 for the municipalities included in the sample. Unfortunately, the non-respondents did include the cities of Humbolt, Lenoir City, Newbern, Newport, Sparta, Springfield, Tullahoma and Union City, all of which own and operate a municipal electric utility.

The final data set consists of 222 municipalities over the eleven-year period spanning 1988-1998. On average, 93 percent of the state's population is represented in the sample. Survey data collected include general fund expenditures of municipal governments and local revenue. Data on state-shared payments-in-lieu-of-taxes from TVA and municipal distributors and property tax payments from cooperative electric utilities were obtained from the Municipal Fund Report published by the State of Tennessee and relevant reports submitted by the respective utilities. Data collected from public sources include population and total assessed property value. The sample was subdivided into municipalities with an average population less than 10,000 and municipalities with an average population greater than 10,000.

Table 3.9: Municipalities Not Included in Analysis

Atwood	Hartsville	New Market	Silerton
Baileyton	Henning	New Tazewell	Slayden
Benton	Hickory Valley	Newbern	South Pittsburg
Berry Hill	Hornbeck	Newport	Sparta
Bethel Springs	Hornsby	Normandy	Spring City
Braden	Humbolt	Oakdale	Springfield
Bradford	Huntington	Oakland	Sunbright
Brighton	Huntsville	Oneida	Surgoinsville
Bruceton	Iron City	Orlinda	Tellico Plains
Calhoun	Lake City	Orme	Tennessee Ridge
Caryville	Lakeland	Palmer	Toone
Centertown	Lakewood	Parker's Crossroads	Townsend
Coalmont	Lobelville	Pegram	Trimble
Collegedale	Loretto	Petersburg	Troy
Cottage Grove	Luttrell	Philadelphia	Tullahoma
Cumberland Gap	Lynnville	Pikeville	Union City
Englewood	Maynardville	Puryear	Vanleer
Fairview	McLemoresville	Ramer	Viola
Finger	Medina	Ridgeside	Vonore
Friendsville	Midtown	Ridgetop	Wartrace
Gadsen	Millegeville	Rives	Watertown
Garland	Mitchellville	Rockford	Waverly
Gates	Monteagle	Samburg	White Bluff
Gilt Edge	Morrison	Sardis	Whitville
Grand Junction	Moscow	Scotts Hill	Williston
Guys	Mount Juliet	Selmer	Woodbury
Harrogate		Signal Mountain	Woodland Mills

Historical Trends for Municipalities

Table 3.10 and Figures 3.13 and 3.14 provide a summary of the reliance of Tennessee municipalities on revenue contributions of electric utilities during the period of 1988 to 1998. The contributions from electric utilities have provided a consistently stable source of revenue for local governments. Although small in terms of percentage of expenditures or local revenues, the PILOTs are a significant source of revenue for local governments. The reliance on PILOTs is relatively consistent between both large and small municipalities with local own-source revenue of smaller municipalities being slightly more contingent on PILOTs, even though larger municipalities enjoy a 14 percent higher per capita transfer from electric utilities. Possible explanations for the higher reliance of smaller communities is lower demand for more and better locally provided services, thus a reduced pressure on local policymakers to generate revenue and/or the lack of a well-developed tax base necessary for raising own-source revenue. Another notable trend is that the reliance on PILOTs has decreased for both smaller and larger municipalities even though the level of contributions (both in nominal and real terms) has risen. Several factors may have contributed to the reduction in reliance,

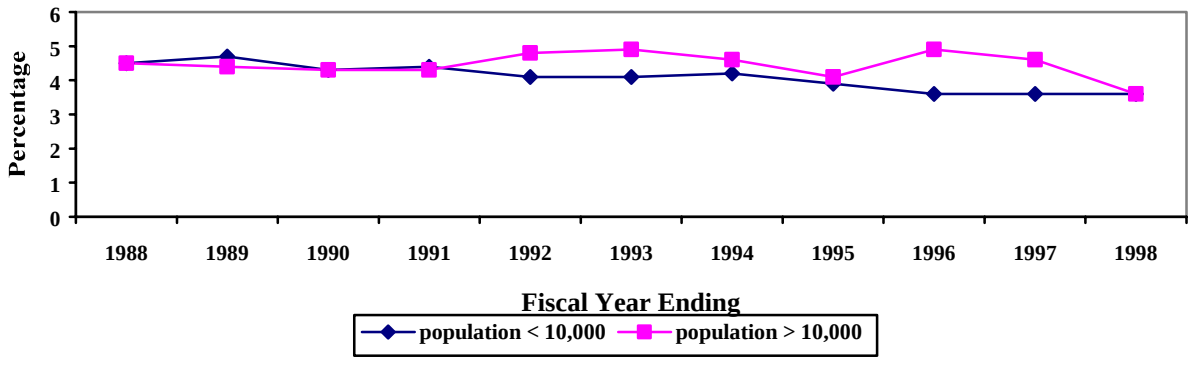
Table 3.10: Reliance of Tennessee Municipalities on Revenue From Electric Utilities[a]

	1988	1989	1990	1991	1992	1993	1994	1995	1996	1997	1998	AVG
Population <10,000												
Percent of General Fund Expenditures	4.5	4.7	4.3	4.4	4.1	4.1	4.2	3.9	3.6	3.6	3.6	**4.1**
Percent of Local Own-Source Revenue	5.2	5.3	5.0	5.0	4.8	4.8	4.7	4.5	4.5	4.4	4.2	**4.8**
Population>10,000												
Percent of General Fund Expenditures	4.5	4.4	4.3	4.4	4.8	4.9	4.6	4.1	4.9	4.6	3.6	**4.9**
Percent of Local Own-Source Revenue	5.0	5.3	5.0	5.0	4.1	3.6	3.5	4.5	3.4	4.6	4.2	**4.2**

[a] Revenue includes state-shared TVA payments and PILOTs and property tax payments from local distributors.
Source: Calculations based on data from Tennessee Department of Revenue, Municipal Fund Report and annual audit reports from municipalities.

including expansions in state and local economies that have resulted in expansions in other own-source revenues relative to electric utility transfers. It should be noted that while PILOTs tend to play a more significant role in general fund expenditures for larger cities, it is not indicative of the trend for percentage of total expenditures. The reason is that larger cities generally have a greater

Figure 3.13: Electric Utility Revenue Contributions as a Percentage of General Fund Expenditures for Municipalities in Tennessee

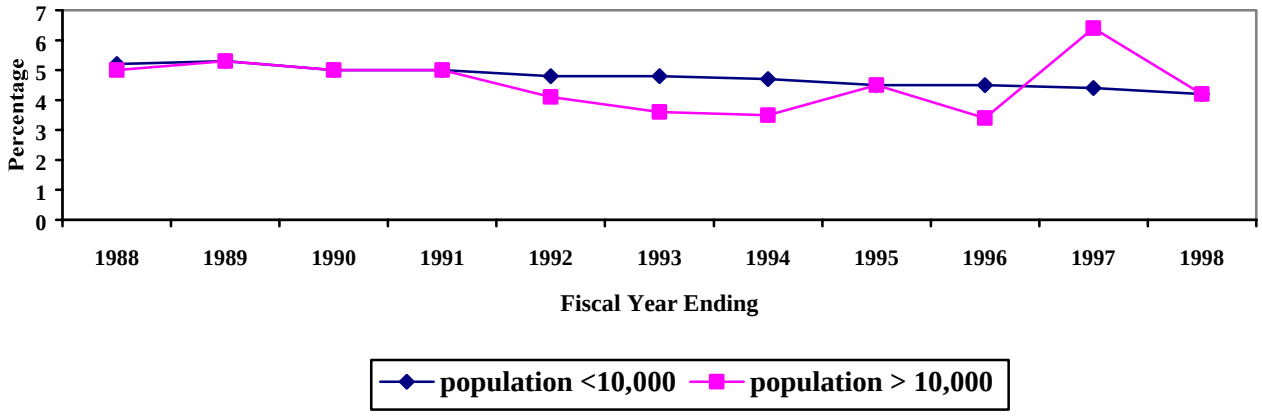


Source: Calculations based on data from Tennessee Department of Revenue, Municipal Fund Report and annual audit reports from municipalities.

portion of their total budget managed through enterprise funds that do not flow through the general fund. As a result, general fund expenditures are likely to represent a smaller portion of the total operating budget for large municipalities than for small municipalities. Therefore, while PILOTs

may represent a larger percentage of the general fund expenditures for cities with population greater than 10,000 than for smaller cities, it is reasonable to suggest that the reverse would be true for total operating expenditures.

Figure 3.14: Electric Utility Contributions as a Percentage of Local Own-Source Revenue for Municipalities in Tennessee



Source: Calculations based on data from Tennessee Department of Revenue, Municipal Fund Report and annual audit reports from municipalities.

Significance of State-shared TVA PILOTs for Municipal Finance

PILOTs paid by TVA are calculated as a gross receipts tax of 5 percent paid to the state. As discussed in Chapter 1, the state distributes 48.5 percent of the payments to local governments. Thirty percent of the portion earmarked for local governments is distributed to municipalities. As shown in Table 3.11, TVA contributions represent a larger portion of total payments from electric utilities for municipalities with populations under 10,000 than for those with populations over 10,000. For example, the total per capita transfer for small municipalities is almost two dollars (or 13 percent) less than that for large cities. At the same time, the per capita TVA transfer is one dollar (or 30 percent) more for small cities.[42] In addition, the TVA portion of the transfer constitutes 0.8 percent and 2.0 percent of general fund expenditures and local own-source revenue, respectively, for

[42] It should be noted that distribution of the state-shared TVA PILOTs to municipalities is based on population, therefore per capita transfers should be the same. The differences reported here arise from using annual population estimates from the U.S. Census Bureau as opposed to the decennial population estimates used for distribution purposes.

Table 3.11: Revenue Implications of Electric Utility Contributions for Municipalities in Tennessee, 1998 (in dollars)[a]

	Population <10,000	Population >10,000	Total Sample
Per Capita Total Transfer	12.70	14.64	13.89
Per Capita TVA Transfer	4.30	3.30	3.76
Total Percent of General Fund Expenditures	3.6	3.6	3.6
TVA Percent of General Fund Expenditures	0.8	0.5	0.6
Total Percent of Local Own-Source Revenue	4.2	4.2	4.2
TVA Percent of Local Own-Source Revenue	2.0	0.9	1.3

[a] Revenue includes only state-shared TVA PILOTs and revenue from local distributors
Source: Calculations based on Tennessee Department of Revenue, Municipal Fund Report and annual audit reports from municipalities. Population data obtained from U.S. Census

small municipalities compared to 0.5 percent and 0.9 percent for large municipalities. As a result, a loss of TVA PILOTs would require a larger increase in own-source revenue or a greater decrease in the level of local services provided in smaller communities. However, loss of revenue contributions from electric power *distributors* would have a greater impact on large communities. For example, transfers from distributors comprise more than 77 percent of the total transfer to local governments in large municipalities compared to only 66 percent for small municipalities.

County Data

Budget data necessary for the county level analysis were collected *from County and Municipal Finance Reports* compiled by the Division of Local Finance, Comptroller of the Treasury, State of Tennessee and *County Fund Reports* from the Tennessee Department of Revenue. The data set consists of all 95 counties over the eight-year period spanning 1988-1995. Data on PILOTs and property taxes paid to county governments by the distributors were obtained from audit reports submitted by the respective utilities.

Historical Trends for County Governments

Table 3.12 provides a summary of the reliance of county governments in Tennessee on revenue contributions of electric utilities during the period 1988-1995. The contributions, representing on average between 2.1 and 2.5 percent of the counties' total operating budget, comprise a significant and stable source of income for the counties. It is important to note that the expenditure reliance for the counties is calculated using total *operating* expenditures whereas the expenditure reliance for municipalities was calculated using *general fund* expenditures, hence, the two are not directly comparable. The reason for the difference in measurement units is data availability. However, the measure of local own-source revenue reliance for counties and municipalities are comparable. Between 1988 and 1995, revenue payments from electric utilities to county governments comprised from 4.9 percent to 5.6 percent of their total local revenue collection. This indicates that county

governments are slightly more reliant on contributions from electric utilities relative to municipal governments.

Table 3.12: Reliance of Tennessee County Governments on Revenue Contributions of Electric Utilities, 1988-1995[a]

	1988	1989	1990	1991	1992	1993	1994	1995	AVG
Percent of Operating Expenditures	2.4	2.5	2.4	2.5	2.5	2.2	2.1	2.1	**2.3**
Percent of Local Own-Source Revenue	5.1	5.6	5.2	5.1	5.0	4.9	5.2	5.2	**5.2**

[a] Revenue includes state-shared TVA PILOTs and payments from local distributors.
Source: Calculations based on data obtained from County and Municipal Finance Reports and annual reports submitted by electric utilities.

Significance of State-shared TVA PILOTS for County Governments

County governments receive 70 percent of the 48.5 percent of TVA PILOTs distributed to local governments by the state. Thirty percent is distributed based on population, 30 percent is distributed based on land area and the remaining 10 percent is distributed based on TVA property located in the counties. Table 3.13 provides details on the significance of the TVA portion of the payments for county governments in 1995.

Table 3.13: Significance of TVA Payments to County Governments in Tennessee, 1995

	TVA Per Capita Payment	Total Transfer Per Capita	TVA Percent of Operating Expenditures	Total Percent of Operating Expenditure	TVA Percent of Local Own-Source Revenue	Total Percent of Local Own-Source Revenue
Anderson	7.49	11.30	1.30	2.85	0.86	1.89
Bedford	8.98	10.56	1.07	2.10	0.91	1.79
Benton	46.40	64.55	6.25	14.44	4.49	10.38
Bledsoe	19.08	27.10	2.58	9.53	1.82	6.71
Blount	5.96	8.03	1.12	1.94	0.83	1.44
Bradley	8.11	8.16	1.05	1.83	1.04	1.82
Campbell	14.80	17.32	1.68	4.12	1.44	3.52
Cannon	13.42	20.63	2.11	5.71	1.37	3.72
Carroll	11.12	13.91	3.93	6.87	3.14	5.49
Carter	6.62	10.39	1.43	3.78	0.91	2.41
Cheatham	6.91	15.53	1.34	2.85	0.60	1.27
Chester	11.29	17.10	1.72	5.07	1.13	3.35
Claiborne	13.70	13.70	1.46	4.09	1.46	4.09
Clay	14.77	24.18	1.91	6.51	1.17	3.97
Cocke	11.19	13.50	1.48	3.99	1.23	3.31
Coffee	8.64	9.70	1.51	2.75	1.34	2.45
Crockett	10.52	16.95	1.78	4.11	1.11	2.55
Cumberland	9.86	9.92	1.04	2.07	1.04	2.06
Davidson	3.56	30.34	1.62	1.86	0.19	0.22
Decatur	26.08	29.02	2.72	8.91	2.44	8.01
Dekalb	10.46	14.97	1.69	5.05	1.18	3.53
Dickson	8.07	17.33	1.46	2.72	0.68	1.27
Dyer	8.67	12.23	1.64	3.53	1.17	2.50
Fayette	13.14	18.99	1.82	4.54	1.26	3.14
Fentress	15.53	15.53	1.48	3.66	1.48	3.66
Franklin	14.38	15.00	1.66	3.73	1.59	3.57
Gibson	7.92	10.46	4.78	6.63	3.62	5.02
Giles	11.81	15.69	1.47	2.93	1.11	2.20
Grainger	23.09	32.24	3.22	10.63	2.31	7.61
Greene	7.51	9.12	1.30	2.56	1.07	2.11
Grundy	13.37	22.07	1.68	6.42	1.02	3.89
Hamblen	7.09	11.84	0.95	1.90	0.57	1.14
Hamiliton	5.56	17.51	2.03	2.57	0.64	0.81
Hancock	15.42	15.42	1.11	5.79	1.11	5.79
Hardeman	13.58	19.13	1.88	6.04	1.33	4.29
Hardin	18.35	22.95	2.28	5.82	1.82	4.65
Hawkins	12.95	19.40	2.27	4.86	1.51	3.25
Haywood	13.30	19.70	1.60	3.92	1.08	2.64
Henderson	14.54	17.50	2.24	6.26	1.86	5.20
Henry	25.37	30.74	3.72	7.47	3.07	6.16
Hickman	16.85	25.78	2.41	6.27	1.57	4.10
Houston	23.10	33.32	3.02	8.92	2.09	6.18
Humphreys	40.73	48.07	4.01	9.54	3.40	8.08
Jackson	15.71	26.82	2.44	6.75	1.43	3.95
Jefferson	13.66	23.48	2.54	5.56	1.48	3.23
Johnson	13.20	27.53	2.74	7.04	1.31	3.38
Knox	3.99	11.40	1.10	1.62	0.39	0.57
Lake	11.63	18.63	1.73	5.31	1.08	3.31

Table 3.13: Significance of TVA Payments to County Governments in Tennessee, 1995 (contd.)

	TVA Per Capita Payment	Total Transfer Per Capita	TVA Percent of Operating Expenditures	Total Percent of Operating Expenditure	TVA Percent of Local Own-Source Revenue	Total Percent of Local Own-Source Revenue
Lauderdale	10.56	14.31	1.35	4.54	1.00	3.35
Lawrence	9.39	12.04	1.15	2.77	0.90	2.16
Lewis	13.98	19.08	1.71	5.35	1.25	3.92
Lincoln	10.79	15.16	1.75	4.17	1.25	2.97
Loudon	23.99	31.61	3.93	6.89	2.99	5.23
Macon	31.61	38.80	1.98	5.29	3.07	8.21
Madison	2.69	7.37	0.60	1.04	0.22	0.38
Marion	21.77	28.11	2.86	7.45	2.21	5.77
Marshall	26.20	28.02	2.42	4.49	2.26	4.20
Maury	4.68	6.70	0.64	1.22	0.45	0.85
McMinn	3.77	4.09	0.51	1.05	0.47	0.96
McNairy	20.11	28.30	2.97	7.40	2.11	5.26
Meigs	70.00	70.00	5.77	20.03	5.77	20.03
Monroe	30.32	31.18	3.40	7.97	3.31	7.75
Montgomery	4.81	10.25	0.96	2.00	0.45	0.94
Moore	17.22	17.22	1.18	1.10	1.18	1.10
Morgan	14.29	15.12	1.38	3.50	1.31	3.31
Obion	9.58	14.79	1.90	3.56	1.23	2.31
Overton	12.12	19.78	2.01	5.49	1.23	3.36
Perry	39.78	51.15	4.32	6.90	3.36	5.37
Pickett	16.01	17.39	1.27	4.38	1.17	4.03
Polk	29.05	29.05	2.74	7.03	2.74	7.03
Putnam	5.82	10.22	1.06	1.83	0.60	1.04
Rhea	28.73	30.24	3.53	8.17	3.36	7.76
Roane	19.58	22.36	2.99	5.93	2.62	5.19
Robertson	7.03	15.62	1.42	3.04	0.64	1.37
Rutherford	4.83	11.20	1.15	2.01	0.50	0.87
Scott	13.47	13.47	1.29	4.32	1.29	4.32
Sequatchie	14.74	21.99	1.65	4.94	1.11	3.31
Sevier	7.62	11.59	1.01	1.70	0.66	1.12
Shelby	3.66	3.66	0.58	0.82	0.58	0.82
Smith	13.34	21.47	2.14	5.47	1.33	3.40
Stewart	108.16	116.52	10.53	35.68	9.78	33.12
Sullivan	5.14	6.64	0.96	1.50	0.75	1.16
Sumner	5.13	11.92	0.97	1.89	0.42	0.81
Tipton	7.34	13.81	1.29	3.03	0.69	1.61
Trousdale	16.40	25.32	1.99	5.26	1.29	3.41
Unicoi	7.21	9.79	1.09	2.58	0.80	1.90
Union	32.61	41.01	4.38	15.32	3.49	12.18
Van Buren	26.85	36.47	2.97	9.37	2.18	6.90
Warren	9.36	14.05	1.20	2.52	0.80	1.68
Washington	4.65	7.55	1.40	2.22	0.86	1.37
Wayne	20.99	28.28	2.73	8.09	2.03	6.00
Weakley	9.98	21.92	2.58	5.87	1.18	2.67
White	10.60	14.44	1.74	3.80	1.28	2.79
Williamson	5.58	14.71	1.28	1.61	0.48	0.61
Wilson	6.19	12.66	1.44	2.60	0.70	1.27
AVERAGE	15.53	20.96	1.58	2.10	4.01	5.23

As can be seen, the reliance of county governments on TVA payments varies widely across the 95 counties. In 1995, TVA per capita transfers ranged from a low of $2.69 for Madison County to a high of $108.16 for Stewart County.[43] On average, the per capita amount of the TVA portion of transfers from electric utilities to county governments was $15.53, which accounted for more than 74 percent of the total value of per capita transfers. In general, counties are significantly more reliant on the TVA portion of the transfers relative to municipalities.[44]

IV. FINANCES OF MUNICIPALITIES OWNING A MUNICIPAL ELECTRIC UTILITY

Municipalities owning an electric utility are potentially most vulnerable to revenue losses resulting from competitive pressures in the electricity market. The reason for the increased vulnerability is the fact that they generally receive larger transfers. One specific source of vulnerability is the portion of the PILOT paid by municipal distributors based on the financial performance of the distributor. The formula used in determining the level of municipal PILOTs includes 4 percent of the distributor's average gross profit for the previous three years. If the gross profit of the distributor declines as a result of restructuring activity, the resulting revenue for local governments will contract. The channels by which restructuring and competition in the electric utility industry may affect gross profits (discussed further in Chapter 4) include the potential negative impact of unbundling of commodity and service charges, price effects and potential changes in the tax treatment of distributors. A second source of vulnerability is the property tax component. If restructuring leads to pressure for uniform taxation that would treat electric utilities in the same manner as other businesses, reduction in assessment ratios and changes in valuation methods could lead to lower levels of payments. The current section is primarily concerned with providing analysis of the significance of electric utilities on the finances of the municipalities that own them and the potential magnitude of the impacts.

Data for the analysis contained in this section are from several sources including audited budget reports of the owning municipality, annual reports for the municipal distributors and reports filed with the U.S. Department of Energy, Energy Information Administration. Some distributors are omitted from the analysis due to missing data from their owning municipality. The four county-owned electric distributors were omitted from the analysis for consistency purposes. A list of the municipalities owning a distributor included in the analysis is provided in Table 3.14.

[43] Stewart County represents a unique circumstance. The portion of the state-shared TVA payment allocated based on TVA property is disproportionately large due to TVA Land Between the Lakes.

[44] This is not surprising because the impetus for the law change in 1978 that required sharing of TVA payments with local governments came from county governments that were looking for an improved method of dealing with the impact of TVA projects on local economies.

Table 3.14: Municipalities Included in Analysis

Alcoa	Dyersburg	Lawerenceburg	Oak Ridge
Athens	Elizabethon	Lebanon	Paris
Bolivar	Erwin	Lewisburg	Pulaski
Bristol	Etowah	Lexington	Ripley
Brownsville	Fayetteville	Loudon	Rockwood
Clarkesville	Gallatin	Maryville	Shelbyville
Cleveland	Greeneville	McMinnville	Smithville
Clinton	Harriman	Memphis	Sommerville
Columbia	Jackson	Milan	Springfield
Cookeville	Jellico	Morristown	Sweetwater
Covington	Johnson City	Mount Pleasant	Trenton
Dayton	Knoxville	Murfreesboro	Winchester
Dickson	LaFollette	Nashville	

The sample of 51 municipalities is divided into five sub-samples based on average population for the time period spanning 1992 to 1998. Table 3.15 provides a breakdown of the number of municipalities included in each population group. One-third of the municipalities owning an electric utility have an average population between 5,000 and 10,000 for the time period used in the analysis while more than two-thirds have an average population of less than 20,000.

Table 3.15: Average Population of Sample Municipalities Owning an Electric Utility

Population Class	Number of Municipalities
Less than 5,000	7
5,000 to 10,000	17
10,000 to 20,000	12
20,000 to 50,000	9
Greater than 50,000	6

Source: Population data from U.S. Census Bureau

Per Capita PILOTs

Table 3.16 displays the breakdown of PILOTs expressed in per capita terms from 1992 to 1998 for municipalities owning an electric utility in Tennessee. The recent trend in PILOTs paid to municipalities owning an electric distributor reveals that the distributor portion of the PILOT accounts for 67 percent to more than 87 percent of the total PILOT. Thus, TVA PILOTs account for less than one-third of the revenue that distributor-owning municipalities receive from electric utilities. Additionally, per capita TVA transfers generally declined as the population of the

Table 3.16: Per Capita PILOTs from Electric Utilities to Electric Utility Owning Municipalities in Tennessee by Population Class, 1992-1998

	< 5,000	5,000-10,000	10,000-20,000	20,000-50,000	>50,000
TVA per capita transfers					
1992	6.90	6.31	5.46	5.15	4.57
1993	6.95	6.21	5.45	5.11	4.51
1994	6.79	6.11	5.32	5.17	4.39
1995	7.49	6.70	5.85	5.71	4.83
1996	7.16	6.51	5.59	5.40	4.63
1997	7.22	6.49	5.91	5.82	4.97
1998	6.58	5.72	5.67	5.58	4.86
Municipal distributor per capita transfers					
1992	13.92	27.54	33.34	14.43	15.74
1993	14.74	28.06	18.88	15.37	16.68
1994	15.37	30.05	19.62	16.80	19.05
1995	15.68	31.70	19.94	17.55	20.09
1996	15.38	33.36	21.38	18.79	20.23
1997	15.69	35.41	22.51	19.40	20.65
1998	15.72	37.10	23.24	20.31	20.07
Total per capita transfers					
1992	20.83	33.85	38.80	19.58	20.31
1993	21.69	34.27	24.33	20.48	21.19
1994	22.16	36.16	24.94	21.96	23.44
1995	23.16	38.40	25.79	23.26	24.92
1996	22.54	39.87	26.97	24.19	24.86
1997	22.91	41.89	28.42	25.23	25.62
1998	22.30	42.83	28.91	25.90	24.93

Source: Data calculations based on Tennessee Department of Revenue, Municipal Fund Report and U.S. Census Bureau

municipalities increased.[45] Data indicate that municipalities with an average population of 5,000 to 10,000 experienced the largest average per capita transfer from their respective electric distributor, thus translating into the largest total per capita transfer from electric utilities.

Reliance on Electric Utility Transfers

The reliance of utility-owning municipalities on PILOTs in terms of the percent of local own-source revenue is displayed in Table 3.17. Again, the municipalities with an average population of 5,000 to 10,000 have been the most reliant on electric utility transfers, and the reliance on the transfers eases as the population of the communities increase. On average, municipalities owning an electric utility are more reliant on revenues from the electric utility industry than the rest of the sample, with the exception of the largest municipalities (population greater than 50,000) owning an electric utility (see Table 3.11). For example, for the entire sample of municipalities with populations less than 10,000, electric utility transfers accounted for 4.8 percent of the total local own-source revenue while those owning a distributor derived 8.0 percent of their total local own-source revenue from electric utility

[45] Again, the differences in per capita TVA transfers are due to using annual population estimates in the calculations as opposed to decennial estimates.

transfers. Another notable trend is the general decline in the significance of electric utility transfers as a percent of own-source revenue from 1992 to 1998 across all population classifications with the exception of the largest municipalities. For municipalities that own an electric utility and have populations greater than 50,000, the reliance on the transfers from the electric utility industry declined from 1992 to 1996 and then increased substantially in 1997 before experiencing a less than offsetting decline in 1998.

The data indicate that municipalities that own an electric distributor are more reliant on the revenue transferred from the electric utility industry. As a result, these municipalities face a greater degree of vulnerability and uncertainty in the era of electric utility restructuring. More specifically, communities with a population of 5,000 to 10,000 and owning an electric utility appear to be the most poised for financial hardship in the wake of negative impacts arising from restructuring in the industry. Their relatively heavy reliance on electric utility revenue can be attributed to several factors including greater pressure from voters to provide local public services afforded to residents in larger communities and a less developed tax base.

Table 3.17: PILOTs from the Electric Utility Industry as a Percent of Local Own-Source Revenue for Electric Utility Owning Municipalities in Tennessee by Population Class, 1992-1998

	<5,000	5,000-10,000	10,000-20,000	20,000-50,000	>50,000
TVA PILOT as percent of OSR					
1992	2.19	2.06	1.36	1.53	0.63
1993	2.45	1.82	1.41	1.44	0.58
1994	1.86	1.62	1.28	1.23	0.50
1995	1.82	1.64	1.30	1.35	0.50
1996	1.83	1.64	1.20	1.26	0.46
1997	1.96	1.48	1.16	1.17	0.88
1998	1.72	1.22	1.10	1.04	0.78
Municipal PILOT as percent of OSR					
1992	4.41	8.98	8.31	4.29	2.18
1993	5.21	8.24	4.87	4.35	2.15
1994	4.20	7.98	4.73	4.01	2.18
1995	3.80	7.75	4.44	4.16	2.07
1996	3.94	8.41	4.58	4.39	1.99
1997	4.25	8.05	4.41	3.91	3.65
1998	4.12	7.93	4.50	3.77	3.21
Total PILOT as percent of OSR					
1992	6.59	11.04	9.67	5.83	2.81
1993	7.66	10.06	6.28	5.79	2.73
1994	6.06	9.60	6.01	5.24	2.68
1995	5.62	9.39	5.74	5.52	2.56
1996	5.77	10.05	5.77	5.66	2.44
1997	6.21	9.53	5.57	5.08	4.53
1998	5.84	9.16	5.60	4.81	3.98

Source: Calculations based on budget reports submitted by municipal governments and electric distributors, Tennessee Department of Revenue Municipal Fund Report and the U.S. Census Bureau

V. SUMMARY

In total, the 63 municipal electric utilities and the 23 rural cooperatives in Tennessee served more than 2.5 million customers in 1998. Combined sales of the distributors totaled more than $4.6 billion. Traditionally low rates and reliability have contributed to the popularity of electricity as the energy choice for Tennessee residents and businesses. However, consumers have not been the only beneficiaries from the electricity industry. Local governments have also benefited from revenue contributions from the firms in the industry.

In general, the reliance of municipal governments on transfers from the electric utility industry is small but not insignificant. State-shared PILOTS from TVA and local distributors have provided municipalities in Tennessee with a stable source of revenue, enabling local policymakers to expand the level of local public services provided and/or to reduce the burden of local taxes on residents. On average, PILOTs have represented 4.1 percent and 4.9 percent of the total general fund expenditures for small and large municipalities in Tennessee, respectively, during the time period of 1992 to 1998. During that same period, PILOTs have accounted for 4.8 percent and 4.2 percent of the local own-source revenue of small and large municipalities, respectively. Again, while the percentages may seem small, they are not insignificant. This is especially true since a reduction in the level of payments would result in the decision by local policymakers between fiscal replacement (i.e., an increase in local own-source revenue) and fiscal retrenchment (i.e., a reduction in the level of local public services provided).

The legislation passed in 1978 ensured that county governments in Tennessee would be more reliant on revenue from electric utilities. Specifically, they are more reliant on the TVA portion of the transfer. On average, over 5 percent of county governments' local own-source revenue are comprised of revenue from the electric utility industry, with more than 4 percent coming from TVA. Counties with significant TVA-owned property located within their borders are particularly vulnerable to potential negative revenue impacts resulting from restructuring activity in the electric utility industry.

The potential for negative impacts arising from a reduction in the level of transfers from the electric utility industry is also greater for municipalities that own an electric utility. Data show that these municipalities are sometimes as much as twice as reliant on electric utility transfers as are municipalities that do not own an electric utility. More specifically, municipalities owning an electric utility and having an average population of 10,000 to 20,000 tend to be the most reliant on revenue contributions from the electric utility industry. As a result, they potentially have the highest level of exposure to any negative impacts on the level of revenue transferred from electric utilities to local governments resulting from heightened competition in the industry.

CHAPTER 4:
REVENUE IMPLICATIONS OF ELECTRIC UTILITY RESTRUCTURING FOR LOCAL GOVERNMENTS IN TENNESSEE

I. INTRODUCTION

Deregulation of the electric utility industry will have two major impacts on local revenue -- direct revenue effects and indirect, or feedback, effects. First, direct revenue impacts will arise from changes in retail prices and the unbundling of generation, transmission and distribution functions. Revenue collected from utility customers via transaction-based taxes (sales and use and gross receipts based taxes) will be impacted as a result of these changes. Additional direct effects include changes in taxes paid by the utilities themselves such as property taxes and PILOTs which will be affected not only by price changes but also legislative or legal changes. Second, indirect or feedback effects will result from changes in private-sector economic activity that may occur in response to changes in electricity markets including changes in prices, reliability or quality as well as changes in state level revenue collections from electric utilities.

This chapter examines the direct and indirect impacts on local revenue stemming from restructuring of the electric utility industry. Section II provides a discussion of the potential direct impact on consumption-based taxes, property taxes and the profitability of the municipal distributors. Section III examines the indirect or feedback effects of restructuring on local revenues. More specifically, plausible effects on revenue sharing and economic activity are discussed. A discussion and numerical simulations of the potential reactions of local governments to changes in the level of direct revenue derived from electric utilities are put forth Section IV. The final section of the chapter provides a brief summary.

II. DIRECT REVENUE IMPACTS ON LOCAL GOVERNMENT

Transaction-Based Taxes

Deregulation of the electric utility industry in Tennessee is likely to eliminate the monopoly service area of TVA. Along with the elimination of TVA's monopoly service area will be the elimination of the automatic uniformity of state and local taxes on electric power in protected local markets. As other generators of electric power, both in-state and out-of-state, begin competing for customers in Tennessee, delivered prices of electricity will reflect differences in state and local taxes, thus creating inter-jurisdictional tax competition. Along with the tax competition comes the legal and economic problems associated with transaction-based taxes. The major transaction-based taxes imposed on the electric utility industry in Tennessee are the gross receipts tax and the sales and use tax. The primary issues complicating transaction-based taxation of the electric industry in a non-regulated environment include legal nexus challenges, pyramiding of taxes on business inputs or intermediate services, non-uniformity in definition of the tax bases used by state and local governments, and the unbundling of goods and services. Following is a discussion of the direct revenue impacts of transaction-based taxes.

Gross Receipts Taxes

TVA currently pays the state of Tennessee payments–in-lieu-of-taxes calculated as 5 percent of its gross receipts, imposed on in-state consumption. Forty-eight and one-half percent of the total TVA PILOTs is redistributed to local governments, providing a significant source of revenue for county and municipal governments. Gross receipts taxes are subject to several revenue stream risks in the event of deregulation. The primary risk is the legal issue of sufficient nexus. State and local governments may not have nexus to impose these taxes on out-of-state power providers that lack a physical presence in Tennessee. Inability to tax out-of-state-providers would lead to reduced revenue for local governments and a competitive disadvantage for in-state power providers. To avoid loss of revenue due to lack of nexus, many states have repealed the gross receipts tax on electric generators and replaced it with a sales and use tax where the use tax is imposed on in-state consumers of electricity provided by out-of-state firms. The use tax is then collected from the in-state distributor. Another alternative is to replace the gross receipts tax with a kWh distribution tax that applies to all distributors of electricity. Whatever the method, a primary goal of the tax design should be to create a level playing field in terms of taxation between in-state and out-of-state generators of electricity. Many analysts also argue that revenue neutrality should be a goal -- a policy consideration that is discussed in more detail in Chapter 5.

The second major risk to revenue flows from the gross receipts tax on electricity providers arises due to potential changes in retail prices. Since gross receipts taxes, by definition, are based on a firm's revenue, downward pressure on the retail price of electricity will result in lower revenue collections if there is no corresponding change in demand. If, however, lower prices induce customers to decrease their consumption of other sources of energy and increase their consumption of electricity, gross receipts tax collections from the electric utilities could increase. Of course, it is likely that the increase in collections from the electric utilities would be at least partially offset by decreased collections from other energy sectors. One way to mitigate the impact of lower retail prices would be to replace the current gross receipts tax with a kWh tax. The tax receipts would be immune to changes in prices and they would grow at a reasonably predictable rate with the growth of population and economic activity in the state. Another advantage of the kWh tax is that it creates a more level playing field between in-state and out-of-state providers since it creates a destination-based tax on electricity as opposed to an origin-based tax (policy implications of destination-based as opposed to origin-based taxes are discussed in Chapter 5). However, there are concerns about the potential regressivity of a kWh tax. In the current regulated environment, a kWh tax is likely to be more regressive than a gross receipts tax since the gross receipts tax can be spread over all entities, including tax exempt entities. In a competitive environment, it is not clear which tax would be regressive since electric power suppliers would have the incentive to shift the burden of a gross receipts tax from large industrial customers to small residential customers. In-depth analysis of specific alternate tax proposals under specific restructuring regimes would be necessary to fully access the regressivity of either type of tax. While such an analysis is beyond the scope of the current report, it should be considered before restructuring tax reform is undertaken.

Sales and Use Tax

Traditionally, deregulation in the electric utility industry would lead to direct impacts on collections from the local option sales and use tax for local governments. However, in Tennessee, the local

option tax does not apply to energy fuels or electricity.[46] Hence, any impacts on sales and use tax collections will impact local governments only indirectly through revenue sharing arrangements. Shifts in revenue sharing arrangements may come about due to the fact that sales and use tax collections at the state level are vulnerable to the revenue stream risk associated with deregulation. The two major sources of vulnerability are the reductions in retail prices of electricity and the unbundling of charges. The first, reduction in retail prices, is self-explanatory given that the sales tax is an ad valorem tax. Unbundling of charges is not as clear-cut. Even if consumers have the option to buy electricity from an out-of-state provider, the consumers will continue to receive the services of transmission and distribution from an in-state provider. Since the three components of electric power -- production, transmission and distribution -- may not necessarily be purchased from the same entity, it is likely that the charges for these three distinct functions will be unbundled. Under the current sales and use tax regime, it appears that only the product of electricity would be subject to the state's sales tax while the services of transmission and distribution would likely be exempt. If this proves to be the case, unbundling of charges would lead to a significantly reduced tax base on which the tax rate would apply, thus leading to a substantial reduction in revenue collections from the electric power sector. The impact of unbundling could be mitigated by replacing the sales tax on electric power with a kWh tax and setting the rate so that the final effect would be revenue neutral.

Ad Valorem Property Tax

Local governments in Tennessee receive a significant amount of revenue from electric utilities based on the property tax or some proxy for the property tax. Electric cooperatives pay ad valorem taxes to all taxing jurisdictions, both county and municipalities, in their service area. Municipal distributors pay PILOTs which are largely based on a measure of their property tax liability to the owning municipality and other taxing jurisdictions they serve.[47] In addition, a portion of the TVA PILOT is distributed to local governments based on the value of TVA property located within a jurisdiction. Therefore, changes in the value of property owned by electric utilities could potentially have major impacts on the fiscal well-being of local jurisdictions.[48] The value of property owned by restructured utilities is likely to be affected by the following: 1) change in property values resulting from the sale of utility assets, 2) different approaches to valuing utility and non-utility property, and 3) closure of a power plant that is unable to compete (stranded costs).

The level of stranded costs may be the largest single factor determining the impact restructuring will have on property tax revenue. Although stranded costs are not expected to be an issue for municipal and cooperative distributors, they could be substantial for TVA. Estimation of the impact is difficult without a detailed assessment of which TVA-owned assets would lose value and to what degree. Counties and municipalities with no significant TVA property on their tax roles will sustain little or no impact. However, localities with larger portions of their tax base comprised of TVA-owned property are at risk for substantial tax base erosion as a result of restructuring.

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[46] Water or energy fuels extracted by a manufacturer may be taxed at 0.33% by entities with county level local option rates of 1% or less and at 0.5% by entities with higher rates (M. Lee Smith Publishers LLC., *2000 Tennessee Tax Guide*).

[47] See Chapter 1 for a complete discussion of the laws regulating distribution of PILOTs paid by municipal distributors.

[48] The level of PILOTs paid directly to the counties by TVA is based on the value of the land at the time of TVA's acquisition and includes only land used for power generation. It is possible that deregulation could eliminate this tax advantage for TVA, thus leading to substantial increases in the level of payments to local government.

A second important factor determining the impact on property tax revenue is the differential treatment of utility and non-utility property by state and local governments. The property tax is the primary source of the relatively high tax burdens on electric utilities. The source of these high property tax burdens is the manner in which utilities are taxed relative to other types of business property. Differences between utility and non-utility property taxation in Tennessee include: 1) centralized assessment that includes assessment of intangible values not picked up by local assessment procedures, 2) higher assessment ratios relative to other classifications of property, 3) non-uniform treatment of personal property and 4) relatively long depreciation lives for utility property. Deregulation is expected to lead to increased political, legal and market pressures to eliminate the differences, especially the centralized assessment as a unit and the non-uniform classification system. The push for reduced tax burdens will be fueled by the inability to automatically recoup the costs of higher taxes through higher consumer prices. Tennessee, as well as several other states, is currently dealing with a similar situation with the telecommunication industry and the taxation of local and long distance telephone service providers.

All local governments in Tennessee will be subject to the risk of reduced property tax revenue from electric utilities if more uniform treatment vis a vis other classes of property results from deregulation. Other states have addressed the relatively high property tax burden on utilities either in advance or as part of a comprehensive state and local tax reform package included as a component of deregulation legislation. Attempts to ease the impact on local governments have given rise to several alternative plans. For example, Arizona passed legislation that set the assessment ratio for electric utilities at 25 percent which is consistent with other businesses. However, the legislation maintained central assessment of the utilities. In fact, most states are maintaining the practice of central assessment and unit valuation. Iowa took a more drastic approach by passing legislation that replaced the property tax with a revenue-neutral excise tax on electricity generated in the state, transmission lines in the state and power delivered to end users residing in the state. The excise tax has several different rate structures that differ across taxing jurisdictions. Maryland implemented a more simplified approach of providing local property tax reductions to utilities through state tax credits. Under this plan, local jurisdictions continue to receive the property tax revenue and the utilities are subsidized by the state. The end result is that localities heavily dependent on property tax revenue from electric utilities are subsidized by taxpayers statewide.

Profitability of Distributors

A portion of the PILOTs paid by municipal distributors to local governments in Tennessee is based on the gross profits of the distributors. Local governments choosing to own and operate a distributor are entitled to 4 percent of the average gross profits for the preceding three years annually. Deregulation is likely to bring about changes that will affect the gross profits of distributors and potentially the current PILOT arrangement, thus impacting the revenue received by local governments.

Potential sources of impact on distributor profitability are changes in the retail price of electricity, unbundling of charges, changes in the law regulating the level of payments made to local governments and changes in the scope of operations undertaken by the distributors. In a competitive environment, it will not be as easy for providers of electric services to automatically pass taxes on to the final consumer through higher prices; therefore, it is not certain that distributors could continue to guarantee the current level of payments to the owning jurisdiction. Furthermore, if TVA is deregulated, it is likely that its regulatory control over distributors of its electric power would be

dissolved. Without the requirement of TVA oversight, the potential for changes in state legislation regarding the operation of municipal electric utilities and electric cooperatives is likely to increase for both economic and political reasons. Fewer controls could open the door for local governments to actually increase the revenue contributions from electric utilities via discretionary transfers of monies from municipal utilities to the general fund of the owning jurisdiction. This is especially true if municipal and cooperative distributors can choose to enter the electric generation market and opt out of retail choice. In some instances, revenue flows would be increased through increased property tax levies, utility receipts and the potential for discretionary fund transfers. However, the reverse may also be true. Revenue flows could be negatively impacted due to diminishing fiscal health of electric utilities forced to operate in a competitive environment.

Even if the current laws governing the operation of municipal electric distributors are maintained through restructuring legislation, retail competition gives rise to the potential for revenue impacts resulting from changes in gross profits of the distributors due to unbundling of charges. Retail choice would mean that municipal distributors would only be providing and charging for distribution services, and it is not clear how this change would impact the profitability of the utility. It is possible that since the transmission and distribution channels of the industry are likely to remain regulated, the prices charged for these services would be set in a manner that would result in revenue neutrality for the portion of local revenue attributed to distributor profitability. Given all of the possibilities of how restructuring legislation will affect municipal distributors, local governments are faced with uncertain outcomes regarding the impact of deregulation on revenue contributions from the municipal distributor to the owning jurisdiction.

III. INDIRECT REVENUE IMPACTS ON LOCAL GOVERNMENTS

Intergovernmental Aid

Many experts agree that the net impacts of deregulation on state and local revenue combined could potentially be relatively small. However, they also agree that there are significant differences in the manner in which deregulation will impact different types of taxes and, therefore, different levels of government. The consensus is that in most cases, state governments will be the revenue winners while local governments will be the revenue losers. The reason states stand to gain at the expense of local governments is that many of the replacement taxes utilized to reduce the property tax burden of electric utilities are imposed and collected at the state level. Therefore, a local tax is being replaced by a state-level tax. This issue has given rise to substantial political debate concerning revenue sharing arrangements and the adjustments necessary to mitigate the negative revenue consequences of deregulation at the local level, thus leading to the implementation of *hold harmless* policies. There are two primary concerns with regards to changes in the level of intergovernmental aid arising from deregulation: 1) the manner in which state governments react to potential decreases in the level of collections currently shared with local governments and 2) if and how state governments will devise new sharing arrangements to offset declining property tax collections at the local level.

In addition to the TVA gross receipts tax, Tennessee shares portions of excise taxes on mixed drinks, gasoline and motor fuel, beer, alcoholic beverages, and petroleum as well as sales and use, income, and corporate excise taxes with local governments. In total, state-shared revenue and grants accounted for an average of 35 percent of operating revenue of local governments in 1998, indicating that changes in the level of state revenue could lead to significant impacts on local government finance. For example, contraction in the level of sales tax collections arising from electricity sales due to decreases in price will have a negative impact on the level of revenue the state collects, creating fiscal pressure. As a result, the state could potentially reduce the level of revenue it shares with local governments as a means of mitigating fiscal pressure on state government. Another issue is how changes in state legislation regarding the treatment of electric utilities for property tax purposes will impact governments. If laws are changed to make utility taxation more uniform with other types of businesses, local governments will sustain a decline in property tax bases. Many states have included provisions assessing transition charges in their deregulation legislation to mitigate these effects. Others have passed legislation allowing local governments to levy a kWh tax on the state-defined tax base to help offset other revenue losses while some have failed to recognize and address the issue, leaving local governments vulnerable to fiscal uncertainty.

Perhaps the more important issue is how the state will apportion revenue derived from the electric utility industry in the absence of regulation and TVA oversight. Any time policymakers are faced with tax reform, they have the opportunity to define tax rates, tax bases and revenue apportionment. The absence of TVA oversight creates such an opportunity by giving the state discretionary power in devising the tax structure applicable to electric utilities and any resulting revenue sharing arrangement. For example, Tennessee could replace the current gross receipts tax with a kWh tax that would apply to both in-state and out-of-state suppliers of electricity for in-state consumption and redistribute a portion of the revenue to local governments based on the situs of consumption. Under this arrangement, urban areas would benefit while rural communities would lose. Alternatives include changing the tax structure and maintaining the apportionment formula currently in use or devising some other apportionment formula based on selected criteria such as population, situs of consumption and amount of electric utility property located within a taxing jurisdiction. The bottom line is that in an era of deregulated electricity markets, the state has the authority to decide revenue sharing arrangements, and there is no guarantee that the current levels of sharing (local governments get 48.5 percent of TVA payments) will be sustained. The current fiscal health and inadequate revenue structure of state government exacerbate the uncertainty of the revenue sharing issue.

Basic Education Program (BEP) Funding

One of the most prominent intergovernmental aid programs in Tennessee is the BEP program. An important component of BEP funding is the fiscal capacity of a jurisdiction, which is in part based on equalized assessed property values. Therefore, restructuring in the electric utility industry is likely to significantly impact the distribution of this funding. More specifically, it is plausible that all communities in the state will see a shift in their funding due to the change in property tax bases. Those who have significant losses in their base, perhaps due to stranded costs or changes in the assessment ratio, will receive a higher percentage of the program costs from the state. However, the increase in funds from the state may not be enough to offset the loss in property since there is no hold harmless provision in the BEP funding formula. On the other hand, if federal legislation is changed and TVA's power generation sector is to be treated the same as investor-owned utilities, taxing jurisdictions with significant TVA power generating property would stand to gain substantial increases in their property tax base. This would lead to a reduction in the percentage of the BEP

costs received from the state. However, the increase in property tax revenue from TVA is likely to more than offset any decrease in state funding. It is clear that restructuring will force communities to adjust to shifts in BEP funding, but the changes will be somewhat tempered by the provision in the BEP funding formula that allows for the smoothing of data. Fortunately, the smoothing of the data will allow for some adjustment period, thus phasing in the effects of restructuring.

Evaluation of more specific effects on BEP funding is an area for future analysis and is a bit premature at this early stage of restructuring given that the effects hinge on federal action regarding TVA. A more complete examination of the effects of alternative proposals will be necessary when the federal government revisits the issue of the role of TVA in a restructured market.

Feedback Effects of Private-Sector Economic Activity

The anticipated benefit of deregulation of the electric utility market is a decrease in electricity prices. Since electricity is an input into virtually all production processes, changes in the prices of electricity are expected to have economic impacts across most all sectors of the economy. Economic impacts, measured in terms of increased output, personal income and employment, will potentially arise from two sources: 1) the nationwide reduction in electricity costs, which will have a direct impact on every state, and 2) the changes in electricity prices in Tennessee relative to the price in the U.S.

If deregulated prices drop in absolute terms for both Tennessee and the U.S., the economic impacts for the state and localities should be positive. The positive impacts can be attributed to lower absolute electricity prices in the rest of the U.S. that stimulate demand for all products, including those from Tennessee, and absolute price decreases in Tennessee that lower production costs for domestic businesses and increase purchasing power of local residents. In terms of revenue for local governments, as the economy expands through higher levels of output, income and employment, a corresponding expansion in local tax bases and revenues can be expected. Of course the magnitude of the economic benefits arising from lower electricity prices will depend in large part on how the price of electricity in Tennessee changes relative to the price in the U.S. If the decrease in price in Tennessee is smaller than the average decrease for the U.S., the economic benefits for the state and local communities are likely to be smaller than if the relative change in Tennessee is larger than the U.S. as a whole. Given the already favorable position of Tennessee in terms of retail electricity prices, there is a strong possibility that the change in prices for the state will be small relative to national averages. Of course, benefits of deregulation are likely to vary across different consumer classes. For example, it is a widely held belief that large industrial customers are likely to benefit the most from electric deregulation while residential and commercial customers will experience smaller declines in electric costs. The degree of price discrimination across customer classes will play a major role in dictating the extent and distribution of private-sector economic impacts. The distribution of private-sector economic impacts across communities and regions will hinge on the mobility of capital. For example, the responsiveness of capital investment with respect to electricity prices is likely to differ depending on whether it is industrial capital or commercial capital, which differ with respect to the relative importance of electricity costs as a percentage of total operating costs.

Although there is agreement among researchers that electric utility deregulation will lead to positive economic benefits, thus giving rise to indirect revenue potential for local governments, there is much disagreement about the extent to which these indirect impacts will offset the direct impacts of deregulation. One potential way to discern the effect of both direct and indirect revenue impacts for

local governments is to undertake a detailed analysis of both the state and local economies. For example, using regional input/output models, the impact of changes in electricity prices on output, employment, and income could be evaluated. Once the impacts are estimated, resulting changes in the level of local revenue collections could be forecasted and compared against calculated direct impacts. However, given the early stage of deregulation discussions in Tennessee, this type of detailed analysis is beyond the scope of the current report.

IV. POTENTIAL REPLACEMENT AND RETRENCHMENT EFFECTS

As a regulated monopoly, all applicable federal, state and local taxes and fees are viewed as part of allowable operating costs and as such are included in the electric rates charged to customers. Since utility bills generally do not explicitly reflect these tax obligations, the general public is likely to have imperfect knowledge regarding the amount of their electric bill attributed to taxes. If the local taxes paid by electric utilities flow into the general fund of local governments, these funds may be used to lower the reliance on other types of more visible local revenues or to supplement these funds in an effort to increase the provision of local services. Therefore, in the event of contracting revenues from electric utilities as a result of deregulation, many local government officials will be faced with the unpopular decision of choosing between raising local taxes (replacement) or reducing the level of services provided (retrenchment). This section of the report provides a general analysis of the potential replacement and retrenchment effects of electric utility deregulation for local governments.

Replacement Effects

Replacement effects can vary from increases in existing local taxes, such as property and business taxes, to the imposition of new taxes and fees. One way to gain a simple understanding of the potential magnitude of replacement effects stemming from electric utility restructuring is to measure the increase in property tax levy necessary to offset the loss of local revenue from electric utilities. The results of this exercise using municipal-level data for 1998 are displayed in Table 4.1. The analysis suggests that complete elimination of the electric utility payments would translate into average replacement costs of increased property tax levy equal to $0.09, or a 3.6 percent increase in average equalized property tax rates. The replacement costs for total PILOTs are higher for larger cities than for smaller with the smaller localities having higher replacement costs for the TVA portion of the revenue stream.

Table 4.1. Replacement Costs of Electric Utility Revenue Contributions in Terms of Property Tax Rate Increases, 1998 (in dollars)

	Population <10,000	Population > 10,000	Total Sample
Total Property Tax Replacement Cost	0.07	0.09	0.09
TVA Property Tax Replacement Cost	0.03	0.02	0.02

Source: Author's calculations

Retrenchment Effects

Statistical analysis was undertaken to facilitate the understanding of the stimulative effects of PILOTs on local government expenditures in Tennessee. Uncovering the manner in which electric utility revenues impact the level of spending on local public services will allow estimation of potential retrenchment effects of deregulation. Using the data described in Chapter 3, models of the demand for local public services at both the municipal level and the county level are developed. The purpose of developing the models is to uncover the relationship between electric utility revenue contributions and the level of local public goods provided. Articulating the impacts of these contributions can provide some important insight into the manner in which local governments may react to the impact of electric utility restructuring on the level of contributions. The statistical analysis provides the ability to calculate the marginal effect of electric utility subsidies on local government expenditures directly by using the coefficients from the estimation. *Marginal effects* measure the response of expenditures given a one dollar change in PILOTs. Once the marginal effects are calculated, the response to changes in the *level* of revenue contributions can be examined.

The stimulative effects of electric utility contributions on the level of local services are examined using a measure known as *elasticity*. The elasticity of local government expenditures with respect to revenues from utilities is measured as the percentage change in the level of expenditures given a percentage change in the level of utility revenue contribution. Electric utility revenue contribution elasticities are calculated using the results of two different statistical models for both municipal and county governments; therefore, they provide a range of responsiveness. Elasticities for municipal governments are calculated for total general fund expenditures and expenditures on the four largest service categories: 1) streets and public works, 2) public safety, 3) general government and 4) social welfare and recreation.[49] The elasticity of education expenditures is the only calculation done at the county level since education spending is the largest expenditure category across all counties and since data limitations prohibited further analysis for county governments.

Table 4.2 presents a comparison of the elasticity measures across levels of government and service categories. Comparison of the elasticities reveals that the different models provide similar estimates. Furthermore, the estimated elasticities are relatively stable across different service categories and levels of government. For example, the elasticities for municipal governments range from 0.08 to 0.49 and the measures for county governments range from 0.20 to 0.24.

[49] Education spending was not modeled at the municipal level due to the non-uniformity of the structure and funding of education systems at the municipal level.

Table 4.2. Comparison of Electric Revenue Contribution Elasticity Measures for Municipal and County Level Governments[a]

	Model 1	Model 2
Municipal Governments		
Total General Fund Expenditures	0.29	0.32
Streets and Public Works	0.34	0.36
Public Safety	0.49	0.36
Social Welfare and Recreation	0.08	0.39
County Governments		
Education	0.20	0.24

[a] Coefficients used in the calculations of elasticities were significant at the 95 percent confidence level.
Source: Dowell, Paula (2000) Electric Utilities, Fiscal Illusion and the Provision of Local Public Services, University of Tennessee,Knoxville; unpublished dissertation.

The models suggest that the demand for local public services is relatively inelastic with respect to revenue contributions from electric utilities. In other words, the change in public expenditures in response to a one percent change in the level of revenue derived from electric utilities is less than one percent. For example, general fund expenditures of municipal governments would decrease by a range of 2.9 percent to 3.2 percent in response to a 10 percent decrease in the level of revenue from electric utilities and TVA. Spending on public safety and social welfare and recreation appears to be the most responsive to changes in electric utility payments with elasticity measures suggesting that a 10 percent decrease in payments would lead to retrenchments in spending ranging from 3.6 to 4.9 percent and 4.0 to 4.6 percent, respectively. Education spending at the county level was among the most non-responsive to changes in electric utility payments with elasticity measures indicating a decrease of only 2.0 to 2.4 percent in response to a 10 percent decline in payments. The relatively milder response of education spending is likely due to the fact that the majority of education is funded via earmarked revenues.

Simulation Analysis of Replacement and Retrenchment Effects

Using the elasticity measures discussed above, responses to changes in the level of payments from electric utilities are simulated. Simulation analysis will provide a better understanding of the implications of the potential changes in utility subsidies on the magnitude of resulting replacement and retrenchment choices policymakers will face.

Due to the interaction of several potentially offsetting forces (discussed earlier in this chapter), the effect of electric utility restructuring on the level of revenue local governments derive from electric utilities is ambiguous. Given the numerous factors to be considered and the early stage of restructuring in Tennessee, it is beyond the scope of the current analysis to forecast specific changes in the level of electric utility contributions due to restructuring. Therefore, the simulations utilized here provide predictions about responses in the level of spending based on "as if" changes in the

level of taxes collected from electric utilities. Additionally, it is assumed that all other factors remain constant, including intergovernmental aid. Thus, it is assumed that any revenue loss stemming from declining payments from electric utilities not compensated for by retrenchment in public services is replaced by increasing local taxes.

The simulations are conducted for a range of possible scenarios regarding changes in the level of electric utility revenue due to restructuring activity using the elasticities from the statistical models discussed in the previous section. The results are displayed in Table 4.3. Using the elasticity measures from the two different estimated models provides a range of the potential impacts of deregulation. The range of the decrease in electric utility revenue contributions to local governments used in the analysis is 10 percent to 50 percent. The resulting range in retrenchment of general fund expenditures of municipalities is 2.9 to 16.0 percent.

Retrenchment in education spending is projected to be the least impacted by decreases in electric utility payments as the simulated retrenchment effects range from 2.0 to 12.0 percent. Although the retrenchment effects appear small, similar simulations suggest that a 10 percent decrease in personal income in a community would lead to only a 2.5 percent retrenchment in the provision of local public services. The indication is that payments from electric utilities are more stimulative to local spending than personal income.

Given the assumptions employed in the analysis, the replacement effects or increases in local taxes arising from declining electric utility payments are calculated as the residual of change after accounting for retrenchment effects. The simulations suggest that a 10 percent contraction in the local revenue from electric utilities will result in an increase in local taxes ranging from 5.1 to 8.0 percent. For all of the simulated scenarios, at least nearly one-half of the potential contraction in electric utility payments was compensated for by increases in local taxes. Of course, it should be noted that this approach to simulating replacement effects is admittedly rather simplistic and a more detailed analysis would provide better estimates of the specific impact of electric utility payments.

Table 4.3. Simulation Results Retrenchment and Replacement Implications of Electric Utility Deregulation[a]

Percentage Decrease in Electric Utility Payments

	10%	15%	25%	33%	50%
Retrenchment Effects					
General Fund Expenditures	2.9 – 3.2	4.4 – 4.8	7.3 – 8.0	9.6 – 10.6	14.5 – 16.0
Streets and Public Works	3.4 – 3.6	5.1 – 5.4	8.5 – 9.0	11.2 – 11.9	17.0 – 18.0
Public Safety	3.6 – 4.9	5.4 – 7.4	9.0 – 12.3	11.9 – 16.2	18.0 – 24.5
Social Welfare and Recreation	4.0 – 4.6	6.0 – 6.9	10.0 – 11.5	13.2 – 15.2	20.0 – 23.0
Education	2.0 – 2.4	3.0 – 3.6	5.0 – 6.0	6.6 – 7.9	10.0 – 12.0
Replacement Effects					
Total	5.1 – 8.0	7.6 – 12.0	12.7 – 23.0	16.8 – 26.4	24.5 – 40.0

[a] Retrenchment effects represent declines in spending while replacement effects represent increases in local own-source revenue collections.

Source: Dowell, Paula (2000) Electric Utilities, Fiscal Illusion and the Provision of Local Public Services, University of Tennessee, Knoxville; unpublished dissertation.

for the different categories of local taxes. More detailed simulations of impacts would require specific examples or scenarios of restructuring legislation. Despite its general nature, the simulation models still provide some insight into the potential problems policymakers are facing.

V. CONCLUSION

Deregulation in the electric utility industry has the potential to impact local government revenues through many facets. The most obvious impacts will be via direct revenue effects. These effects could stem from changes in prices of electricity, unbundling of charges for generation, transmission and distribution, demands for uniform property tax treatment and changes in the limitations placed on contributions of municipal utilities. Deregulation will also impact local revenues through indirect effects, the most notable being changes in economic activity due to changes in electricity prices. Most analysts project these impacts to be favorable since lower prices for electricity should stimulate economic activity, thus broadening local tax bases. However, given that Tennessee is already in a competitive position with regards to electric power prices and reliability, it is not clear that local governments in Tennessee will reap the indirect benefits stemming from lower prices to the extent that local communities in other regions might.

Contracting revenues from electric utilities leaves local policymakers faced with the unpopular decision of fiscal replacement or fiscal retrenchment. Fiscal replacement may include raising local taxes, such as property or business taxes, or implementing new taxes and fees. Fiscal retrenchment could lead to higher pupil/teacher ratios, fewer local parks and a smaller number of policemen patrolling the streets. The analysis in the current report suggests that a 10 percent decrease in the

level of revenue collected by local governments from electric utilities could lead to a 2.0 to 4.9 percent contraction in the level of local services, coupled with a 5.1 to 8.0 percent increase in the level of local own-source taxes.

While the numbers may appear small, the implications for local government are potentially substantial; therefore, it is imperative that policymakers at the state level understand the ramifications of deregulation legislation on local governments. Tax changes with regards to the treatment of the electric power industry should take into consideration not only the total revenue effects but also the distribution of the effects across different levels of government to avoid a situation where state government benefits at the expense of local governments.

CHAPTER 5:
TAX DESIGN ISSUES AND OTHER POLICY CONSIDERATIONS OF ELECTRIC UTILITY DEREGULATION

I. INTRODUCTION

There are many issues to be considered when addressing restructuring of the electric utility industry. Policymakers will be charged with implementing legislation that serves the interest of many parties including state government, utilities, residents, businesses and local governments. Often these entities will have competing goals, and striking a balance between these goals can prove a difficult task. For example, consumers are likely to demand retail choice, which is likely to translate into purchasing from out-of-state suppliers. At the same time, policymakers will be faced with pressures from in-state electric utilities that provide employment for residents to make sure out-of-state suppliers do not have a competitive advantage.

The current chapter will address the policy considerations that could potentially cause the most distress for local governments including tax policy, the changing role of Tennessee's electric distributors and the potential for stranded benefits. The remainder of the chapter is organized as follows. Section II contains a discussion of sound tax policy and the resulting implications for tax reform in a deregulated environment. In addition, Section II provides a summary of the general approaches to tax reform with an emphasis on issues concerning revenue neutrality. Section III provides a look at some of the issues and choices that local distributors will face, and Section IV discusses the potential for stranded benefits. The final section provides a brief conclusion and recommendations for future studies.

II. TAX POLICY CONSIDERATIONS

Perhaps one of the most difficult tasks policymakers will face is reforming the tax structure currently imposed on the electric power industry. In reforming the tax system to address the realities that deregulation brings, it is important for lawmakers to understand the often competing tax policy goals of the different stakeholders. It is also important that policymakers understand the general characteristics of sound tax policy and to try to balance these goals or characteristics with the practical and political realities of tax reform. Although there is no single approach to accomplish these goals, there are three fundamental issues policymakers must consider when it comes to tax policy reform for a deregulated electric utility market -- economic efficiency, tax competitiveness and revenue neutrality.

Criteria for Sound Tax Policy

Economists and public finance specialists typically identify six characteristics of sound tax policy: ease of administration and compliance, economic efficiency, competitiveness, adequacy, stability and equity. Many economists also recognize political feasibility as a necessary criterion. The problem facing policymakers is that the criteria are often inter-connected and compete in a policy framework so that the attainment of one goal may only be achieved at the expense of another. It is important to note that the tax policy criteria provide a basis for evaluating the *structure* of a tax system and not the *level* of taxes collected. Therefore, these same criteria are applicable to tax reform situations where revenue-neutral options are being considered as well as situations where the overall level of

taxes are being evaluated. Each of the criteria is examined below with an emphasis on the implications of deregulation for that particular tax policy objective.

Ease of Administration and Compliance

Ease of administration and compliance is important when designing a tax because it leads to lower administrative and compliance costs. A tax should be structured so that the administrative and compliance costs are minimized for both the government and the taxpayers, i.e., the cost of collecting the tax incurred by government and the cost of complying with and remitting the tax for taxpayers should be minimized given the revenue collected. Lowering administrative and compliance costs increases the net revenue by bolstering compliance and reducing expenditures necessary to collect the revenue. Because administrative and compliance costs are directly related to the complexity of the tax, economists argue for uniform taxation that avoids specialized taxes or differential treatment that applies to specifically-defined industries or conditions. Complexity in the tax code increases the cost of collecting the tax by making it more difficult for revenue officials to monitor the tax and receive reliable information in a timely manner. Complexity also creates numerous compliance problems for taxpayers, including increased time and resources necessary to comply with the tax.

Currently, state and local taxes on electric utilities have added a sufficient level of complexity to the tax system. For example, in Tennessee, the taxation of electric utilities leads to non-uniform tax policies for property and sales taxes and adds to the structure by introducing a gross receipts tax specific to electric power. In the era of deregulation, administration and compliance ease will potentially be hampered by the differential treatment of out-of-state suppliers as opposed to in-state providers, unbundling of charges and an increase in the number of taxpayers. The goal of policymakers should be to design tax policy that mitigates the effects of these new challenges on administrative and compliance costs.

Economic Efficiency

Perhaps one of the most important criteria for good tax policy is economic efficiency. Economic efficiency results when scarce resources are allocated to their highest valued use. For example, competitive markets promote economic efficiency by inducing producers to minimize their costs and allowing consumers to maximize their satisfaction based on their income and preferences. In other words, in an efficient market, economic decisions are made so that available resources are used in the production of the most desired goods and services at the lowest possible cost.

All taxes used to fund government spending will distort economic decisions to some extent, thus giving rise to inefficiencies, i.e., virtually all taxes have the potential to cause consumers to change their behavior. The efficiency goal of designing tax policy is to design a tax system that minimizes the distortions or inefficiencies. This is complicated by the fact that each type of tax leads to different types of distortions. For example, income taxes may distort the decision between work and leisure since they lower the after-tax return for work. In addition, the definition of the tax base will also lead to distortions. Narrowly defining the income tax base so that not all income is taxed will bias the ways in which workers demand compensation and choose income-earning assets. Workers may opt for more non-taxable fringe benefits instead of taxable wages. Consumption taxes give rise to different sorts of distortions. For example, incentives to increase the consumption of exempt goods and services are created if the consumption tax base is narrowly defined. In addition, the distortions created by taxation are likely to be exacerbated by high tax rates. Therefore, the general

suggestion of economists and public finance specialists is to design a tax system consisting of broad-based taxes with low rates. By broadening the base, the non-economic distinctions between taxable and non-taxable goods are minimized, and, by keeping the rates low, the economic gains of avoiding and evading taxation are minimized. Hence, there are fewer incentives to alter behavior in an effort to avoid taxation.

An important outcome of an economically efficient tax system is economic *neutrality*. Economic neutrality exists if the choices made by businesses and consumers with regards to the location of investment or consumption are not affected or altered based on the taxes imposed. In other words, a well-designed system reduces or neutralizes the impact of taxes on individual and business decisions and "levels the playing field," an important goal of tax reform in the era of electric utility deregulation. Imposing taxes that treat one group differently than other similar groups can create competitive advantages and disadvantages. For example, imposing a gross receipts tax on electric generators when out-of-state suppliers do not have nexus places in-state suppliers at a competitive disadvantage. Such a tax system is likely to induce in-state suppliers to alter their investment decisions and move out-of-state. The state would not only lose tax dollars from the gross receipts tax, but it would also lose jobs and other potential revenue. A similar situation arises if the tax treatment of utility and non-utility generators differs, as is the case with the property tax. If non-utility generators are treated as other business entities and utility generators continue to be subject to the current property tax laws governing utilities, non-utility generators would have a definite cost advantage in terms of lower taxes. The result would be loss of market for utilities, giving rise to reduced employment and investment by utilities. Uniformity of property tax treatment between utilities and non-utilities would help level the playing field and create a more competitive environment. In summary, to avoid creating an un-level playing field, tax bases should be broadened to include all electricity sold in the state and tax treatment should be consistent regardless of the supplier. Broadening the base alleviates the distortion of investment decisions on the part of suppliers, and it allows policymakers to set lower tax rates while maintaining the level of revenue collected since the tax rates apply to a larger base.

Tax Competitiveness

Tax competitiveness is evaluated by how a government's revenue system compares with other jurisdictions with which it competes in attracting businesses and residents. Business location decisions are a result of a complex decision-making process that involves evaluating a variety of factors including labor costs and availability, accessibility to markets, quality of transportation and other infrastructure, and quality of life characteristics to name a few. Taxes also figure into the decision making process, thus leading to potentially harmful tax competition between jurisdictions. Although there is much debate about the benefits of tax competition itself and its effect on economic efficiency, economists do agree that providing a competitive business environment is important and that taxes can be an important defining element of the state's overall business climate. A state or locality with substantially higher business taxes runs the risk of becoming a less attractive location for business investment; therefore, most jurisdictions do not wish to be too far out of line with neighboring or competing jurisdictions.

Deregulation of the electric utility industry is expected to intensify interstate tax competition and exacerbate the tax competitiveness problems that are already an issue in jurisdictions with relatively high business taxes. General recommendations for maintaining tax competitiveness in a deregulated environment include designing *destination-based* taxes as opposed to *origin-based* taxes and moving

toward a more uniform property taxation policy. First, destination-based taxes allow for the taxation of electricity consumed in the state to be equalized between in-state and out-of-state providers because the tax is imposed on the consumer of the electricity as opposed to the supplier. In other words, regardless of the source of the supply, consumers pay taxes, thus creating a more level playing field between in-state and out-of-state suppliers. On the other hand, origin-based taxes that are imposed only on in-state suppliers would put domestic suppliers at a disadvantage in interstate markets to the extent that other states do not levy similar taxes. Such a policy would potentially lead to the loss of business investments as suppliers decide to escape taxation by locating outside of the state. Second, uniformity in the imposition of property taxes will help to create a more competitive environment. Given that several other states have or are in the process of reforming property taxation of electric utilities to be more in-line with other types of businesses, more pressure will be put on Tennessee to do the same in an effort to attract capital investment to the state. Counties will also feel pressure to keep property tax rates in line with surrounding localities if they hope to compete for the investment dollars, tax base expansion and jobs offered by electric power generators.

Equity

Equity, which is concerned with the distribution of tax burdens, is the most subjective of the criteria for sound tax policy. Therefore, it is no surprise that the question of "who should pay taxes" gives rise to more debate than most other tax policy issues. Despite much disagreement about what constitutes an equitable tax, there is a general agreement that equity considerations are an important component of sound tax policy. To help facilitate equity considerations in tax policy discussions, economists have identified two concepts of equity -- horizontal equity and vertical equity.

Horizontal equity refers to the degree to which tax systems treat taxpayers in similar economic situations equally. In other words, a horizontally equitable tax system avoids subjecting similar taxpayers to different levels of taxation. For example, if the sales tax were horizontally equitable for similarly structured households, the sale of retail goods would be taxable no matter how the goods were purchased, i.e., at a retail outlet, over the Internet or by mail catalog. Enacting a "use" component to the sales tax is one way policymakers attempt to achieve horizontal equity in the sales tax. In order for the income tax to be considered horizontally equitable, all income, regardless of the source, should be subject to the tax.

Vertical equity deals with the question of ability-to-pay, or how taxpayers in different economic situations (i.e., low versus high income) are taxed relative to one another. The primary way that policymakers try to influence the degree of vertical equity is by implementing progressive effective tax rates, and thus, engineering a redistribution of the tax burden based on income or some other measure of ability-to-pay. The question then becomes "what constitutes ability to pay?" Often discussions of vertical equity center on the distribution of the overall tax system across the different income classes and the overall progressivity or regressivity of the tax system. Examples of attempts to make the income tax more vertically equitable include allowing deductions for certain disabilities and for certain expenditures such as medical and educational expenses.

Equity concerns arise in the taxation of utilities due to the differential pricing schemes applied to different classes of customers. One might be concerned with equity across residential, commercial and industrial customers. Many analysts agree that residential customers are likely to benefit substantially less than large industrials in terms of lower prices as a result of deregulation. In fact, there may even be scenarios where residential customers are actually subsidizing large industrial

customers. Other equity concerns arise within classes of customers. For example, residential customers in wealthier urban areas are likely to have access to cheaper electricity relative to residential customers in poorer rural communities. Such a situation would not meet the standard of vertical equity. Various subsidies and special arrangements with suppliers will be necessary to mitigate the inequities created by a competitive environment.

Adequacy and Stability

A tax system can also be evaluated in terms of the variability of the revenue yield over time. When evaluating variability, there are two separate aspects to consider -- adequacy and stability. Adequacy refers to the long-run ability of the revenue system to continue to yield enough revenue to keep pace with the economic growth of the jurisdiction. One measure of adequacy is elasticity. Elasticity measures the responsiveness of revenue collections to economic growth. In other words, to what extent does the tax system automatically generate increases in revenue (meaning without tax rate increases) as the economy expands? It is generally considered desirable to have a revenue system that has a unitary elasticity -- meaning that revenue grows at the same rate as personal income thus allowing revenue yield to keep pace with the demand for public services. Of course different taxes have different measures of elasticity. For example, a broad-based income tax has been shown to be more elastic or responsive to economic growth than the sales tax. It is obvious that if the tax base for the income tax is personal income, then the revenue generated by such a tax should grow at nearly the same rate as the base itself. On the other hand, a sales tax is not as elastic because as personal income grows people tend to allocate a higher percentage of their income to the purchase of non-taxable services and to savings. Therefore, while revenue from a sales tax increases as the economy grows, it does so at a slower rate.

A second important aspect of revenue variability is stability. Stability relates to the short-run volatility of a revenue system. Policymakers want to structure a tax system that is stable over business cycles. Although some short-run variability is inevitable, the goal is to minimize the instability of revenue over economic expansions and contractions. On approach to improving stability is to diversify the tax structure with a balanced mix of taxes on income, consumption and wealth. With a diversified tax system, a change in one tax base may be offset by a change in another tax base. Of course, gaining stability through diversification of tax structure does involve potential trade-offs such as increasing administration and compliance costs. Again, the goal is striking a balance between the different criteria of sound tax policy. The first step in tax reform is for policymakers to establish the objective of the reform. This objective will dictate the relative importance of the different criteria when designing tax policy.

Summary of General Approaches to Tax Reform of Electric Utilities

Policymakers in the states that have entered into or that have passed legislation pertaining to retail choice and electric utility deregulation are focusing on three fundamental issues regarding tax policy -- tax competitiveness, economic efficiency or neutrality, and revenue neutrality. Other criteria, such as equity and stability, are receiving some consideration and are being incorporated into reform policies while others, such as administrative ease, seem to be given relatively little attention, with the exception of nexus concerns. In fact, in many instances, there have been significant increases in administration and compliance costs due to increased complexity of tax structures stemming from deregulation.

Barents Group has identified three basic strategies which categorize the attempts of policymakers to make their tax structure more conducive to retail choice in the electric utility industry and at the same time meet the objectives of tax competitiveness, efficiency and revenue neutrality: 1) replacing unique utility tax structures with a more uniform tax structure that is applicable to other types of businesses, 2) modifying selected, non-competitive state and local tax taxes and 3) maintaining existing utility tax systems by extending utility-specific consumption taxes to out-of-state suppliers.[50]

The first strategy is to achieve uniformity. Several states have moved toward treating electric utilities like other types of businesses for state and local tax purposes. This includes replacing specific utility taxes such as gross receipts with a general sales and use tax and taxing utility property under the same system used for other types of businesses. For example, Ohio, Maryland, New Jersey and Virginia have repealed the gross receipts tax on electric power generation. Maryland and New Jersey replaced the tax by extending the current corporate income tax to include electric utilities.

Another common strategy is modification of non-competitive state and local taxes imposed on electric utilities. Policymakers are paying a great deal of attention to the competitive environment of in-state suppliers relative to out-of-state suppliers. Because deregulation is likely to intensify interstate competition in the electric power industry, much of the focus has been on disparate tax burdens among generators located in different states without much regard for the actual incidence of the tax burden. Several states, including Iowa and Arizona, have attempted to address the tax competitiveness issues directly. Iowa replaced the local utility property tax with a system of consumption based excise taxes with varying rates across different consumers. The goal was to make in-state suppliers more competitive than out-of-state suppliers by replacing an origin-based tax (property tax) with a destination-based consumption tax. The most popular trend in modifying the property tax is to subject utilities to the same assessment ratio as other industrial businesses while maintaining central assessment and unit valuation. Arguments for maintaining central assessment include difficulty in assessment of electric utilities and lack of experience at the local level.

The third common theme of tax reform with regards to electric utility deregulation is the extension of current utility taxes to out-of-state suppliers. In some cases this involves changing the tax structure to destination-based taxes to avoid the issue of establishing nexus. However, a few states are attempting to establish nexus with potential out-of-state providers as a condition of doing business in the state. For example, New Jersey passed legislation requiring all out-of-state providers that wish to sell electricity in the state to establish an office within state borders.

Revenue Neutrality

A common feature of the majority of legislative changes in states dealing with deregulation has been an attempt to design tax policy that is revenue neutral. Revenue neutrality is somewhat ambiguous as it has been defined in several terms including total state and local taxes imposed on utility customers, total taxes imposed on utilities, total taxes imposed on both utilities and customers, and the distribution of the tax burden across different classes of customers. Political pressure is the key reason for the mandate for revenue neutral tax reform. However, consideration of all dimensions of revenue neutrality when designing tax policy imposes additional constraints on tax changes and are likely to result in significantly more complex tax structures at both the state and local level. For

[50] Barents Group, LLC, "State and Local Revenue Impacts of Deregulation in Kentucky's Utility Industries" (Washington, D.C., 1999).

example, revenue neutral hold harmless policies potentially help local governments, place restraints on state government and limit the ability to change policies over time as may be needed.

Most often, the concept of revenue neutrality refers to *total* taxes collected from electric utilities as evidenced by examining legislation passed by other states. The purpose of designing revenue-neutral tax policy is two-fold. First, legislators do not want to have to face the unpopular decision of cutting services or raising other own-source taxes to fund budget shortfalls due to contractions in revenue collections resulting from deregulation. In some instances, the burden of a non-neutral tax change would endanger the fiscal health of local governments. Second, political feasibility forces policymakers to assure voters that the level of taxes collected is not going to rise due to the tax change (at least in the short-run). Therefore, if tax reform is viewed as an effort to increase tax revenue, it is likely to be subject to strong political objection. Despite the obvious reasoning in favor of revenue-neutral tax changes, there are reasons why such a policy may not be economically efficient. For example, if revenue generated by electric utilities gives rise to fiscal illusion, the argument for revenue neutral changes is weakened.

Fiscal Illusion

Because the electric utility industry is a regulated monopoly, the taxes generated by the industry are considered allowable costs and are passed on to the final consumer via higher electric rates. Currently, taxes are not itemized on a consumer's utility bill and the taxes are spread out over twelve monthly bills, leading to a relatively invisible tax. If voters lack knowledge of these hidden taxes, they will under-calculate the tax price of state and local public services. Assuming that public services are normal goods, meaning that the quantity demanded increases as the price decreases, the lower *perceived* price leads to an increase in the quantity of state and local public services demanded. This phenomenon is known as *fiscal illusion*. Fiscal illusion gives rise to economic inefficiencies because the hidden taxes distort the decisions of voters. If voters had perfect knowledge of the taxes included on their electric bill and the revenue collected by governments from electric utilities, they would potentially demand a different level of public services. In other words, the illusion leads to a misallocation of resources. The conventional argument would imply that because utilities have been a government monopoly (in the case of municipal utilities), the resulting fiscal illusion is likely due to government officials maintaining monopoly power and manipulating public opinion.[51] This position leads one to argue that protecting the entire revenue loss is not economically efficient and should not be a goal of restructuring legislation.

A study conducted by Dowell (2000) revealed that electric utility contributions to the general fund of local governments in Tennessee give rise to tax price distortions, thus leading to fiscal illusion. The results indicate that the level of local public services being provided is greater than would be demanded if voters in local jurisdictions had full knowledge of the taxes included in their electric utility bill. Hence, the findings raise new questions regarding the legitimacy of safeguarding local governments in Tennessee against *all* revenue loss stemming from electric utility restructuring. In other words, constituents of a jurisdiction, not legislators, should decide if losses in local government revenue should be mitigated via revenue-neutral tax changes imposed on utilities, increases in local own-source revenue or contractions in the level of local services provided. However, the voters must first be aware of the current tax burden implicit in their electric bill in order to make an informed choice.

[51] Ronald Fisher, *State and Local Public Finance* (Chicago: Irwin, 1996).

Neutrality Among Customers

Another observation is that revenue contributions from electric utilities may be used to redistribute resources in a fashion deemed socially desirable. For example, under regulated prices, industrial or commercial customers are likely to pay a higher portion of the electric tax but residential customers may receive more of the benefits of expanded local services. After restructuring, many argue that competition for large industrial and commercial customers will result in lower rates for those customers at the expense of residential customers. Hence, under a revenue neutral tax plan that focuses on total revenue, there will be a shifting of the tax burden from industrial and commercial customers to residential customers, altering the distributional aspects of electric utility taxation. To the extent that the tax burden is shifted away from large industrials to small businesses and residential customers, devising a revenue-neutral tax reform focused on total revenue alone becomes less appealing based on equity concerns.

There are also concerns about the change in the distribution of tax burdens among residential consumers located in different regions of a state. For example, there is likely to be more competition for residential consumers in more densely populated urban areas relative to remote rural customers leading to a shift of the tax burden from urban customers to rural customers. A 1998 study of the effects of deregulation on residential customers in Kentucky found that if a competitive retail pricing system allowed for price differentials in the residential rate classes, residential customers in the low density areas would experience significant price increases.[52] The price increases were primarily attributed to fewer suppliers competing for the business of remote customers due to the higher costs of providing them electricity. Thus, limited competition for rural customers provides an incentive for the suppliers to shift a portion of the tax burden to these consumers. Therefore, a revenue-neutral tax design focusing only on total revenue collections is likely to result in a shifting of the tax burden from customers with more bargaining power to those with little or none, a result that does not seem socially desirable. Because of the competing objectives of tax reform, policymakers are faced with the reality that achieving revenue neutrality across and within customer classes combined with total revenue neutrality can be at best problematic, and it is often impossible.

III. THE ROLE OF LOCAL DISTRIBUTORS IN THE ERA OF DEREGULATION

The role of local distributors is subject to dramatic change in the era of restructuring. As discussed in Chapter 4, the absence of TVA oversight in a fully deregulated power generation market will potentially lead to distributors entering the generation business, thus expanding their role. On the other hand, if municipal distributors are not permitted to engage in generation or opt out of retail choice, their role could be diminished. In addition to the generation entry issue, there are many other areas of ambiguity with regards to the role of local distributors in a competitive environment, including billing services, metering service and disconnection policies.

Billing Services

There are significant concerns about how end-users will be billed when there are different suppliers selling electricity generation and transmission services in the same community while distribution services are still provided by local distributors. For example, if the supplier and distributor send separate bills to the end-user, customers could easily become confused thinking they have received

[52] Freshwater, David, Stephen Goetz and Scott Sampson. (1998) "Benefits of Deregulating Electricity May Bypass Rural Kentucky," *Foresight*. University of Kentucky, Vol. 5:1.

two bills for the same service, thus making customer education essential. In addition, separate billing may also give rise to significant duplicate billing costs. On the other hand, a single billing policy also has associated complications. First, if distributors are to be charged with billing, some of the local distributors may not have billing systems capable of handling the complexity resulting from retail choice. Second, single billing will require the need for the manner in which partial payments are allocated between the regulated and competitively provided services to be determined. Regardless of single or multiple billing, revised rules for termination of service for nonpayment to either the distributor or the supplier and collection procedures will need to be established. While the complications associated with billing issues are not insurmountable, they require significant consideration and planning prior to the implementation of retail choice.

Metering Services

Along with retail choice come important concerns regarding the collection of electric usage data for various needs. Local distributors have traditionally been responsible for the collection of that data, which is obtained through its metering services. Generally, metering services are comprised of three distinct functions: 1) meter service, 2) meter data management and 3) meter reading. Meter service refers to the installation, validation, registration and maintenance of the physical meter required on premise to measure electric usage. Meter data management includes validating, editing and estimating raw meter data, analyzing the data and preparing statistical models, and disseminating the data to others for use in various approved applications. Meter reading is the process by which electricity usage data is conveyed from the meter to the meter data management function.

The onset of retail competition is fueling concern about metering and the right of access to those meters. In Tennessee, the electric distribution company currently owns, installs and reads meters and is the only entity with the right to access meters on customer premises. Changes will be needed if other companies require similar access. Additionally, under retail competition, market prices are likely to vary depending on the time of day or day of the week. Therefore, more sophisticated meters and more sophisticated means of handling the communication of data to and from these meters will be necessary. Many argue that opening metering services up to competition is the solution to the ambiguity. However, such a move could have significant impact on limiting the role of local distributors and their revenue potential.

Disconnection Policies

Disconnection policies will also have to be reevaluated in the era of deregulation. Concerns include disconnection for nonpayment of services and disconnection or discontinuity of service resulting from failing to choose or switching to a new supplier. Policies for disconnection due to nonpayment have been addressed in many states by passing legislation allowing for disconnection only in the event of nonpayment of regulated charges such as distribution and transmission. Thus, they allow for little or no disconnection for nonpayment of competitive charges from suppliers. The rationale often given is that competitive electric suppliers have access to the same debt collection procedures available to other competitive industries in the state. However, even private businesses have the right to discontinue service after following legislated collection procedures. For example, cellular phone and pager companies can disconnect service for failure to respond to collection requests.

When a customer fails to choose a supplier, a default supplier should be available. If the local distribution company has generating capacity, they are the logical choice for the default supplier. If the distribution company does not have generation capacity, default suppliers can be assigned

randomly based on market share in the community or can be established by a process where firms bid to be the default supplier. In the situation where a customer has changed suppliers, there needs to be a mechanism to ensure continuity of service. The same default system used to deal with customers failing to choose a supplier should be used to provide service in the interim. To keep costs for providing default service at a minimum, many states have implemented legislation governing the conditions under which customers can switch between municipal utilities and competitive utilities. There may also be a fee attached to changing suppliers.

IV. STRANDED BENEFITS IN ELECTRIC UTILITY RESTRUCTURING

Historically, policymakers have used electric utilities and electric rates to impose tolls for implementing public and social policy initiatives. Utilities perform many functions that benefit the public generally, but they probably could not find a "buyer" for these services in a strictly competitive market. Public services are likely to raise the price of electricity, and companies that continue to offer these services may find themselves under-priced by companies that do not make investments in the public interest. Therefore, these benefits of the current regulated market run the risk of being "stranded" (or left without financial support) unless policymakers provide a mechanism to maintain support for public benefits.

Potential stranded benefits include the following: consumer protections, stable and reasonable residential prices in rural areas, universal service, environmental programs, energy independence and sustainable sources of energy, and stable employment at relatively high wages and good benefits. Traditionally, the state's public service commission was charged with overseeing customer service relations with utilities. Under competition, this may be subject to change, potentially shifting customer relation problems to fall under the characterization of marketing or contract law. Additionally, new metering and billing technologies are likely to challenge the state's ability to preserve customer safeguards. Stable prices may also be a victim of competition. Many analysts predict prices to vary significantly depending on the time of day and the day of the week, giving rise to much confusion and chaos. In reality, residential contracts are likely to be fixed price contracts and large industrials and commercial businesses will be based on peak and non-peak times.

Another significant concern is the provision of universal service. Universal service refers to the ability of all households to obtain essential electricity and is achieved through various regulated programs including fair credit and collection terms and income-based pricing programs. It is estimated that utilities spend over $190 million annually on programs aimed at providing universal service.[53] Because the costs of these programs are substantial, it is not likely that firms in a competitive market would be as committed to the provision of universal service, thus suggesting the need for government intervention.

Of particular concern to local communities is the potential for stranded employment benefits as a result of deregulation. The electric industry has been a good employer for many Tennesseans, offering stable jobs at good wages with excellent benefits. Competitive pressures to cut costs may lead to contractions in the workforce, stagnation of wages and increased downward pressure on the level of benefits offered. Additionally, if facilities are closed or relocated due to competitive

[53] Brockway, Nancy and Michael Sherman, "Stranded Benefits in Electric Utility Restructuring", The National Council on Competition and the Electric Utility Industry: The Electric Utility Restructuring Series, NCSL, October 1996.

pressures, significant employment loss can occur in a community. On the other hand, if the Tennessee market is opened up for suppliers other than TVA, it is likely that firms will be willing to build facilities in the state. In this case, local communities stand to gain employment benefits as a result of deregulation.

Stranded Benefit Preservation Strategies

The National Council of State Legislators (NCSL) has identified four main ways to preserve and extend public benefits of the electric utility industry in a competitive environment.[54] They include 1) requiring market participants to provide these services as a condition of entering the market, 2) raising funds to pay for the "above-market" costs of public services, 3) creating an aggregation of buyers that uses its market power to buy the services and 4) removing market barriers that would otherwise impede the ability of market participants to offer and obtain particular goods and services.

The first strategy is to require private firms to produce public benefits. Licensing agreements, direct regulation and incentive packages, such as subsidies, are three typical ways to implement this strategy. The second approach is to establish a fund to cover the costs of stranded benefits. The funds can be raised via taxation, a kilowatt surcharge on the end-user's electricity usage or a surcharge on providers (generators or distributors or both). Another strategy involves aggregating buyers through cooperative buying clubs, community access providers or a municipal franchise bid process that selects a primary electricity supplier. The negotiating power of a large buying block can lead to a reduction in rates and to an agreement to provide benefits such as low-income protection, renewable power and environmental investments. The final strategy put forth promotes providing the tools for reducing the influence of certain dominant forms of power supply over the market, so that other ways to meet electricity needs can have the opportunity to succeed. By opening the market up to alternative suppliers, inefficiencies are reduced and additional resources are freed up to help cover the cost of providing public services. While no single strategy may alleviate all of the stranded benefits resulting from competition, a portfolio of the four alternatives could potentially minimize the negative impacts.

V. CONCLUSION

Policymakers charged with policy reform related to deregulation in the electric utility industry face a difficult task. Although the majority of legislative changes dealing with deregulation will be the responsibility of state government, local governments have a great deal at stake. Therefore, local policymakers should become engaged in each step of the process, whether it involves reforming the tax system, drafting laws governing the role of local distributors, or implementing strategies to ensure the continuation of public service benefits, to ensure that the interests of local communities are protected.

Many questions have been raised regarding the design of tax reform, including the role of fiscal illusion and revenue neutrality. Even if local policymakers are successful in a quest for revenue-neutral tax reform with regards to total revenue collected, there is great potential for taxpayer discontent once the taxes gain visibility. The existence of fiscal illusion combined with increased

[54] Brockway, Nancy and Michael Sherman, "Stranded Benefits in Electric Utility Restructuring", The National Council on Competition and the Electric Utility Industry: The Electric Utility Restructuring Series, NCSL, October 1996.

visibility of taxes are ingredients for potential pressure on policymakers for increased fiscal restraint. Therefore, revenue neutral tax reform is not a guarantee of protection for local governments.

Perhaps the most challenging issue facing local policymakers will be adjusting to the changing role of local distributors. Some localities will potentially be facing expansion and the associated impacts as distributors decide to enter into the business of electricity supply. Others may encounter contractions in their operations. Local policymakers will be forced to contend with issues such as billing, metering and disconnection policy. Another issue for utilities and local governments to consider is the revenue sharing arrangement between the two entities. Distributors are concerned that without regulatory oversight, the pressure to divert funds from the utility to the general fund could potentially be substantial. On the other hand, local governments may feel that since the municipality owns the utility, the profits rightfully belong to the city and should be available to supplement the general fund. The primary goal of any revenue sharing arrangement should be to provide the municipality with a reasonable rate of return on its investment while maintaining the fiscal viability of the utility.

Whether policymakers are dealing with tax reform, stranded benefits or changing roles of distributors, they need to work toward the goal of striking a balance between the competing objectives of the different stakeholders. While it will be impossible to meet all the objectives, the negative impacts of deregulation can be mitigated through careful analysis and understanding of the issues and the consequences of alternative reform options. The current study provides policymakers with an overview of the electric utility industry in Tennessee, a detailed analysis of the reliance of local governments on revenue collected directly from electric utilities and general discussions on policy considerations. The state is currently in a very premature stage with regards to deregulation, and the recent "failures" of deregulation in California have temporarily stalled the push toward a competitive electric power industry. However, when the time comes for Tennessee to start discussing specific options for deregulation, more detailed analysis of specific impacts over various scenarios is recommended. For example, input-output studies can be conducted to get a better measure of the indirect effects of specific price changes and tax designs on revenue collections via impacts on economic activity. In addition, potential distributional consequences of competitive pricing or shifts in tax incidence across levels of government and across consumers of electric power resulting from alternative options should be carefully evaluated. By educating themselves of the issues presented by deregulation of the electric utility industry prior to implementation, policymakers will be better equipped to respond to the challenges that face them. Deregulation should remain a concern of both local and state policymakers because, while activity is currently stalled, the pressures to move forward with the process will resurface.

TACIR (09/01); Publication Authorization Number 316335; 70 copies.
This public document was promulgated at a cost of $1.25 each.

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